THE STORY OF THE DEVELOPMENT OF A YOUTH

ERNST HAECKEL

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BY

ERNST HAECKEL

LETTERS TO HIS PARENTS 1852-1856

TRANSLATED BY

G. BARRY GIFFORD

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TRANSLATOR'S PREFACE

In the following translation of the remarkable series of letters written, in the full flush of youthful enthusiasm that held him captive for the remainder of his life, by Ernst Haeckel to his parents, the aim throughout has been to render into English *as literally as possible* the exact words of the writer. It is hoped that in this attempt full appreciation and justice have been accorded to the acumen and concepts of the boy who was destined to become in later life so illustrious a naturalist.

The definite trains of thought have been studiously followed and developed, the logical sequence of ideas has been preserved, the spontaneous outbursts of zeal and enthusiasm have been reproduced as clearly and faithfully as the special conditions would allow. There is considerable repetition, in spite of the effort to vary the handful of adjectives and adverbs which recur, sentence after sentence (often several times in some), paragraph after paragraph, throughout the letters. Indeed, in this respect the task was practically an insurmountable one; for the youthful Haeckel was first of all an enthusiast, and a very sincere and honest one, and the admirable and natural manner in which he poured out his soul to his parents in

adoration of Nature and her marvels, without thought of style or choice of words, left him barren of new expressions wherewith to adorn his glowing thoughts, his ecstatic, passionate intensity of feeling. Thus we find him, often lost in endless involved sentences bristling with German idioms and locutions (for which equivalent English expressions are generally to be sought for in vain), regardless of the external form, but ardently conscious of the visions that perpetually floated before his artistic and scientific perception, plunging headlong with boyish intrepidity into his descriptions that seemed to have baffled all his powers.

The whole story is one of development, and is told gradually and more in the form of a diary to the sympathetic and loving hearts of his parents. Surely when the letters were written they were not intended for publication! Therefore, covering as they do a period of several years, they must naturally overflow with repetition, and for that reason must be read as a whole, not as an arrangement of carefully revised and independent chapters. Sometimes they were penned in haste, on the spur of the moment, often after a hard day's work or an arduous and long journey; at other times, amid the distraction of pressing occupations and the daily events of university life.

The character of these letters does not lend itself to any freedom in their translation into another language. Consequently, with the object of doing

the fullest justice to the writer and his fascinating subject, any suggestion of departure from the strict style of the original with his frequently peculiar dialectics, has been carefully and deliberately avoided. There has, likewise, been no intention of substituting any modernism of language for that of the original. To interfere with the diction and mannerism by the much easier and often tempting process of cutting down the long sentences into many shorter ones, would have the appearance of officious tampering with the author's style.

In the same spirit, scarcely any weeding or trimming have been resorted to; for it has been considered that the natural vista of the boyish ideas and ideals presents a more pleasing picture, and one that would best have appealed to Ernst Haeckel himself.

G. BARRY GIFFORD.

BERLIN, January, 1923.

INTRODUCTION

Ernst Haeckel was born at Potsdam on the 16th February, 1834. In the same year, his father, Oberregierungsrat Karl Haeckel, was transferred to Merseburg, and it was here that the future naturalist passed his childhood and his early youth. From his youngest days the miraculous work of nature inspired him with joy, and animals and plants were the declared favorites of his childhood. It was his mother, Charlotte Sethe, who, above all, awakened and fostered his sense for the infinite beauties of nature. His father was more a philosopher than a lawyer, enthusiastic about Plato, Goethe, and Schleiermacher, and vividly interested in the religious and political movements of his time. Both parents devoted themselves to a simple life, conscious of their high parental duties, accustoming their two sons, Karl and Ernst, to simplicity, unremitting work, and fidelity to duty, educating them up to veneration for all that is true, good, and beautiful.

At the age of six years, Ernst went to the intermediate school, where he found in his teacher, Karl Gude, an understanding promoter of his botanical inclinations, which continued to accompany

him through the cathedral classical school of Merseburg, as well as through the whole of his later career. Fields and hedgerows, meadows and woods, rubbish heaps and swamps, were rigorously searched for plants, which were afterward classified, dried, and mounted. "Surely there was never a schoolboy from Merseburg who had laid out such a really magnificent herbarium, in regard to both quantity and quality, as Ernst Haeckel," writes one of his school-fellows, Finsterbusch, whose name is mentioned in these letters. Journeys and walking tours to the Riesengebirge (the home of his father), to Bonn, into the Thuringer Forest and the Harz Mountains, augmented the botanical treasures and the knowledge of the conditions of their growth, and at the same time stimulated his desire to see still more of the world and its wonders. When asked as a small boy what he wanted to become, he answered without much hesitation, "I will be a *Reiser*."[1] Descriptions of the travels of Humboldt and Darwin, but, above all, the *Life of the Plant* (Leben der Pflanze), by Schleiden, strengthened his love for the plant world as well as that for travel, and so he resolved to study botany at Jena with Schleiden and then to go to the tropics in order to study the plant world of the forest primeval.

In the autumn of 1851 his father retired. His parents removed to Berlin, while Ernst remained alone at Merseburg till Easter, 1852, as a boarder

[1] A childish form of the German word *Reisender*, a traveler.

with his friendly school professor, Osterwald. In March, 1852, he passed his final examination. In his maturity certificate the following, among other things, occurs: "Full of warm reverence for his teachers, amiable and agreeable toward his schoolfellows, thoroughly obedient to the regulations, by his conduct, which was in all respects exemplary and pure, he has completely satisfied his teachers of his moral fitness, and in no small degree has won for himself their love. Endowed with excellent talents, he has exhibited during the whole of his school time the most praiseworthy diligence in order to develop them conscientiously, in which it must commendably be recognized that, although from an early time a pronounced predilection had attracted him to natural science, he has nevertheless in no way pursued this favorite study of his at the expense of other branches of education, but he has applied the same consistent and energetic diligence to all his studies. His work in the German language is distinguished by a peculiar treatment of the subject, by a conception full of spirit and feeling, and by a very skillful and fluent style. He has a good understanding of Christianity and a warm appreciation of it. He possesses a distinct and well-founded knowledge of the Christian doctrine of faith and morality, combined with a general view of the history of the Christian religion. His work in physics and the description of nature is excellent; his botanical knowledge, in particular, far exceeds

the requirements of the school." The certificate concludes with the words: "The undersigned examining committee has, therefore, on his leaving school for the purpose of studying medicine and natural science, granted him the certificate of maturity, and on account of the special interest which has been raised in them by his mental and moral qualities takes leave of him with the hearty desire that, under the gracious assistance of God, he will succeed in fulfilling all the hopes and expectations they have placed in him."

His intention to go to Schleiden at Jena at Easter, 1852, was frustrated. In searching for the rare *Scilla bifolia* in the marshy Leislinger meadows at Weissenfels, he contracted articular rheumatism, which forced him to go first of all to be nursed in the parental home in Berlin. Meanwhile he matriculated at the University of Berlin, and attended, as well as his rheumatic knees would permit him to do, the botanical lectures by Alexander Braun and the physical lectures by Dove. In the autumn of 1852 he went to Würzburg and here began the letters which are published in the following pages and which give an account in a diary-like completeness of the external events, and the internal movements of the mind of the future medical man and naturalist without ever falling into the dryness of an ordinary diary.

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OF the time preceding this the Haeckel Archives only possess a few letters, and these are generally unimportant. The oldest one in existence reads (when translated) something like this:

MERSEBURG, *22d Mei, 1840.*

Mi dere grandfather: What are you doing? The 15th Mei we were in Leipzig: I and mother were in a wild beast show we saw there: 1. 4 pelicans, 2. 1 tiger, 3. monkeys, 4. 1 raccoon, 5. 1 wolf and 1 bare together in 1 cage, 6. 1 bare, 7. 1 lion, 8. 1 badger, 9. 1 cockatoo, 10. parrot, 11. 1 big snake. Your ERNST.

From Easter, 1854, to Easter, 1855, Ernst Haeckel studied in Berlin and Johannes Müller inspired him for zoölogy, particularly for comparative anatomy, which thenceforward remained his favorite science during the whole of his life. Unfortunately, the Ernst Haeckel Archives possess no letters of that period, with the exception of those which describe his six weeks in Heligoland. On the other hand, those to his parents, to his brother Karl and his wife Hermine, *née* Sethe, as well as the letters addressed to his aunt Berta Sethe, from Würzburg,

whither Ernst Haeckel returned for three further terms at Easter, 1855, are all existing, faithfully preserved by the parents, so it would seem, in anticipation of their importance. From these letters we have inserted in this publication all those which are important in regard to the development of Ernst Haeckel, all those in which the peculiar character of this ripening man reveals itself. Omissions are indicated by three dots; short remarks added to the text are indicated by square brackets.

If I may rely upon my own judgment, the youthful letters of Ernst Haeckel are among the most precious in the whole of epistolary literature. They acquire a special interest through the personality which is revealed in them. They show the whole Haeckel in growing perfection: his vivid interest in everything natural and human, his quick and keen apprehension, his rapid and striking reproduction of all impressions, his enchanting enthusiasm for his science, his brilliant imagination, his exuberant humor, the variation in his moods, his impulsiveness, his contempt for outward appearances, his veneration for nature, amounting almost to pantheism, his incessant leaning toward the ideal, toward everything that is true, beautiful, and good—toward everything that is characteristic of the perfected Haeckel, all of these we meet here already in the storm and stress of his youth. More surprising than anything else to everyone who knows only the later monist Ernst Haeckel, is the

fact of his sincere Christianity, which is expressed over and over again in the letters. But the change to a naturalist and monist is in course of preparation, is beginning, and is leading to grave internal and external struggles. The serious experiences of life, the study of natural science, the influence of excellent teachers, particularly of Rudolf Virchow, and riper friends, above all of the highly esteemed Beckmann, the observation of the external practice of religion in Würzburg, the Tyrol, and upper Italy, the bitter recognition of human incompleteness and of human misery, all combined gradually to lead him from the religious standpoint of Christianity in respect to the world and life toward a new apprehension of things. This spiritual development, which reveals itself in thrilling soul outpourings, together with the moral development of his personality in constant striving after his real life profession, indeed, make these letters of Ernst Haeckel into a fascinating *Story of the Development of a Youth*, sufficient to arouse the highest interest in the man who announces himself in them.

HEINRICH SCHMIDT.

JENA, ERNST HAECKEL HAUS,
16th February, 1921.

1. WÜRZBURG, *27th October, 1852, evening.*

DEAREST PARENTS,

I have just washed the first human blood from my hands, which, strangely enough, I have not cut and I am now hastening to give you the first news

from here. My journey passed off quite well. From Berlin to Juterbogk, where the cars were changed, I sat alone in the compartment, and had time to suppress by various desperate reflections the strong moral fit of the blues which had overtaken me at my departure. We had to wait at Cöthen for an hour and a half. From there to Halle I traveled with two young married couples, one of whom had only just been married, and they talked of the beautiful wedding presents, and seemed to be very loving and happy. The other couple had with them a little child who cried a great deal, and the mother wept very bitterly. I could not help thinking a good deal of our turtle doves, brother Karl and his wife, and how joy and grief journey side by side. At Halle Weber, Hetzer and Weiss (*who had run over* from Merseburg in order to see me!!!) received me at the station. I left my things at the station and accompanied them to their little attic, where first of all I ate your sausage with them. Then I invited them to a confectioner's for a cup of chocolate. After that, at 11 o'clock, we went to an inn which Weber had decorated with comical wall paintings, the burden of which was "Welcome!" There we chatted very merrily to our heart's content and in particular poured out our botanical souls for the whole summer. At 3.30, in spite of the resistance of Weiss, who absolutely insisted upon taking me to Merseburg, we went to the station, whence I departed for Leipzig. There

I found only one single cab, and in it I drove to the Bavarian station. From there onward the journey was rather tedious, and it was only later, after we had passed the Fichtelgebirge and the Erzgebirge, that it became more interesting; particularly the two enormous viaducts, one of which leads over the Plauen Valley, are very remarkable. They consist of three tiers, rising one above the other, each about thirty feet high with some fifty arches. We remained at Hof from noon till 1.30 in the afternoon. Unfortunately it rained, so that I could not look around the place.

The farther we proceeded in the Main Valley, the more beautiful the country became. In particular, Kulmbach, and the Plassenburg overshadowing it, are very finely situated. We could only see the magnificent convent of Banz, where I was with Karl last Whitsun, in the last glow of the evening sun. At 6.30 we arrived at Bamberg; as the coach to this place only leaves at 10 o'clock, I set out with a Jewish medical student, who has also come here, so as to see something of the town in the meantime. The atmosphere was very cold and clear, and there was a magnificent full moon. The town, antiquated and built on hilly ground, seemed to be very interesting; it possesses very many bridges (over the Regnitz) and (as is the case, also, at Würzburg) a number of churches. The cathedral, standing on an open elevated place, is the most beautiful and the largest of them. It is built in

the purest Byzantine style and is of truly gigantic proportions. The splendid doorway has eleven magnificent arches, very artistically and variously carved, one overtopping the other toward the front. In addition, there were also many magnificent large buildings; but, although mass was being celebrated, all the streets were as though deserted, and we wandered aimlessly about, because there was no one whom we could question. Suddenly, while we passed a very tall, brilliantly lighted church, an immense crowd of people rushed out of it. Mingled with them was a number of monks, nuns, and clergy, who were forming themselves into a procession, which paraded the streets amid singing and howling. From a citizen, of whom we asked the way, we learned that the Jesuits had just been preaching there again, as they were doing four times a day. He grumbled terribly at this nonsense and insisted that the Jesuits only desired to seduce and stupefy the people. My Israelitish traveling companion did not seem to agree with this at all. He regretted not to have come earlier, so that he could have heard them preach. Afterward I also sat with him on the stagecoach in a cabriolet, where we made ourselves very comfortable and slept splendidly through almost the whole of the night. By the way, the mail coaches here consist only of two cabriolets lying one behind the other, and are badly enough driven. We arrived here early this morning. Bertheau received me at

the post office, and took me with him to his house, where I had to breakfast with him. Then we went to mine, which, at most, is but thirty steps distant from his, and lies at a similar distance from the new and old Schools of Anatomy. The landlord and his wife received me in a very friendly manner. But here everybody is friendly, as well as being terribly talkative and inquisitive, whereby the people generally become very tiresome.

About the house and the landlord and his wife more anon. To-day I want just to have a good sleep, and to-morrow morning the letter must immediately go, so that I can get my passport in good time. When I had unpacked my things and had had a little rest, I went out at once with B., who is exceedingly friendly and agreeable, in order to enroll myself. Then I learned that before I can do this it will be absolutely necessary for me to have a traveling passport from the Berlin Police Presidency. Therefore, perhaps, father will be so kind as to notify my removal to the police as soon as possible, to procure me a passport, and to send the same here immediately, because I *must* have it within twelve days (from to-day). Then we still lounged a little about the town, went to the beautiful Main bridge, and then to dine with B., where I ate quite well for 21 kreuzer. After that, B. took me to a coffee-house (here, by the way, one drinks coffee out of glasses) and introduced me to his Mannheim acquaintances, who seemed to be very

nice people. At three o'clock we went to the School of Anatomy; you might well imagine that I got into a terrible funk at the various sights I saw there. Nevertheless, I pulled myself together and took the precaution not to gaze around me too much, and then set to work with good courage. I had to buy myself a dissecting overall for four gulden. It would have been well, after all, if I had brought an old coat with me. By 5 o'clock I had finished the preparation of the *musculus cucullaris*, in which B. had again considerably helped me. I must really be very glad that I have immediately found a friend in B., who is so helpful to me and who renders me such capable assistance in everything. If the weather will be fine again to-morrow, we intend to go for a walk together; although hilly, the surroundings seem to be quite bare of wood. They consist chiefly of vineyards. The citadel, almost impregnably strong, is very finely situated on a very steep, high place on the bank of the Main. In other respects the town is only slightly fortified, but possesses a great number of churches and convents.

When you send the passport, dear mother, you might, perhaps, also pack in some needles and thread. The confusion in this letter is attributable to my terrible fatigue from traveling, the bad handwriting to the horribly pale and blotchy ink.

Hearty greetings to No. 6 and to our young married couple, whom may God further protect and bless. In old faithful love, your ERNST H.

B. sends his best greetings, and also his assurance that he will duly mother me.

2. WÜRZBURG, *31 October, 1852.*

MY DEAR PARENTS,

Sitting as I am now on a Sunday evening quite alone here (Bertheau and my other acquaintances, in spite of the abominable rainy weather, have gone out to take part in the festivities for the reception of the King of Bavaria), and thinking how happily, and in *specie* a week ago, I generally spent the Sunday evenings with you, my sudden distance from you seems again to be very painful and I think that homesickness will probably best pass away when I converse with you, even if only in thought and by letter. I have already found my bearings here to some extent, and have arranged a preliminary program for the day. But, before anything else, I want to tell you what I have been doing here up till now. From Thursday till Saturday I have been preparing the muscles of the arm, as well as of the shoulder and the nape of the neck. The first aversion for dissection was soon overcome, but I cannot acknowledge that I have a real taste for this business. On Thursday morning I became enrolled, which here, like everything else, proceeds with infinite dilatoriness and slowness. By the way, it was only done, "under the reservation of the production of a police legitimation within 12 days," which, therefore, you must obtain for me

from the police, as I have already said in my first letter.

On Thursday afternoon Bertheau conducted me to the "Käppele," a Capuchin monastery magnificently situated in a steep vineyard on the left bank of the Main, from which one enjoys a very fine view over the whole of the surrounding country, particularly over the massive labyrinths of houses in the town itself on the other bank (on the right bank), with its promenades surrounding it in a ring, and a vast number of towers and cupolas. Still more beautiful and more grand on this side, the very strong citadel of the fortress, of which one obtains a complete view in its entire length and breadth, stands out. The country, as a whole, is very monotonous—nothing but vineyards, no potato or rye fields, and on the most distant heights scarcely a trace of wood. After all, the most beautiful spot is the Main bridge, from which one sees little of the naked mountains, but, on the other hand, the fortress from its most beautiful side.

Friday was a day of festivity, and consequently I went in the evening with B. and his friends to a small tavern in order to eat baked carp, which, by the way, was rather large, bad, and cheap. B.'s acquaintances, to whom he introduced me and who, contrary to my expectation, I found to be abstemious and decent (in this country a great rarity), are three Mannheimers: (1) a Jew (very pleasant and reasonable for his nation), of the name of

Weyl; (2) a Walloon, Dyckerhoff (a very handsome and nice man); (3) Zerroni, of an Italian family, clever and amusing. With these two latter, Bertheau (being of French blood) boasts that they represent the three nationalities ruling in Mannheim (Alsatian, Walloon and Lombard). . . .

My room is now completely arranged. It is about 16 ft. long, the same broad, and 8 ft. high, an irregular square in shape and possesses, being a corner room, four windows, each pair of windows opening on to the two adjoining streets. As these latter are very narrow and dark, and as, in addition, two windows open toward the north and two toward the east, where the buildings are high, no ray of sunshine penetrates the room throughout the day. It is also rather cold; the stove is small, entirely of iron and, being a good conductor of warmth, heats the room very quickly, and for a quarter of an hour very considerably indeed, whereafter it gets cold again. The furniture consists of a bed, cupboard, sofa, three chairs, one looking-glass, and a chest of drawers with a smaller draw which has no lock and two that can be locked. In order to give you a proper idea of your boy's cave I inclose a plan. The washstand has a superficial area of one square foot. As a matter of fact, I am very much in need of a desk, as I have only two drawers capable of being locked. Consequently the bed-box with a lock and key is of great service to me, because in it I pack all my plants, summer clothing,

etc. I have also had to pack many other things in the trunk. The books are standing in row on the chest of drawers. For the rest, the room stands six steps above the ground. The landlord and landlady, as I have already told you, are extremely obliging and solicitous, often overflowing with courteousness. The Doctor (whom, by the way, I would not like to call in as a medical attendant) is a fat, very good-humored Bavarian, with a broad head and pointed crown, who talks nearly as much as his broad-shouldered, but also very good-humored wife, who is probably about fifteen years younger than himself (about 35 years of age); one must really be careful not to begin to talk with this good married couple, for the stream of their eloquence and of their benevolence when once let loose can no longer be checked.

Regarding my material physical existence, I pass it thus: (1) early with the assistance of a gigantic cup of fairly passable coffee with two small milk rolls, and (2) mainly with that of the dinner at the "Harmony," where, besides B. and myself, four officers and six students dine. We get 5 courses there for 18 kr. (7 kr. are equal to 2 silver-groschen), namely; (1) soup, (2) beef with sauce, (3) another kind of boiled meat with vegetable (generally cabbage), (4) a kind of pudding, pastry, or something of that kind, and (5) grapes. After that there follows a glass of coffee, for 4 kr., at the Café Oben (where very many students usually gather to play billiards or cards). At the beginning I had ordered

for supper for "certain reasons" (?) some soup at home; but as this appeared to me to be very spiced, fat and heavy, and, also, not too palatable, I have preferred as long as fresh grapes are to be had to eat them for supper. Here they are quite excellent and very cheap; on an average each bunch costs one pfennig; when they are exceptionally good I always think how I would like nothing better than to give you some of them—what a pity that I cannot send you some! The wine itself is also supposed to be extremely cheap and good here. Of the best kind (Steinwein and Bocksbeutel), which are preferred to Rhine and Moselle wine, a glass, larger than grandfather's ordinary wine-glass, costs only 6 kr. This afternoon for the first time, with B. and his comrades, I tippled sweet must, which tasted to me very delicately sour-sweet. A small tumbler of it also costs only 6 kr. Otherwise the food here is not particularly pleasing to me; I specially miss potatoes, which are not eaten here at all. Potatoes are not even cultivated here, nearly the entire population subsisting on wine-growing. As this is very profitable, there is consequently no real proletariat, and, on the other hand, great riches are said to be scarce; the population is mainly a well-to-do middle-class which, however, is said to have rather gone to the dogs as far as its morality is concerned; this, it is pretended, is due to the superabundance of officers and *studiosis medicinæ*. These two classes moreover, stand in rather a peculiar position to one

another; because, not long ago a decree of the late King Ludwig has been renewed, and in which it is said in plain language that no student, under penalty of expulsion, is permitted to offend an officer either by word or deed, and, if offended by one, would not be permitted to challenge him to fight a duel. They are everywhere addressed by the inhabitants (whose chief sources of income, besides wine-growing, are the students) as *doctores* and are treated as such; even in official matters, as, for instance, on the rolls, etc., it is never said: *stud. med.*, but always *cand. med.* (candidate: quite right—). I myself am always addressed, not only by the landlady, but even by the real *Dr. med.*, as "Herr Doctor!"

Monday morning, All Saints' Day.

Yes! poor Dr. med.! poorer cand. med.! poorest stud. med. If only you could know how it stands with him. I will immediately tell you quite openly and straightforwardly that the stud. med. has never been so distasteful to me as it is at this moment. I have now the firm conviction, which also others, wiser ones, have already had before, namely that I can never become a practicing doctor nor can even study medicine. Do not believe, dear parents, that I may have arrived at this conclusion through my first sense of disgust at the practice of dissection, through the "*mephitis* of the dissecting-room and *cadaverum sordes*." The unpleasantness connected with that has already, to a great extent, been over-

come, and also in the future could and must be overcome. But it is quite a different thing to study the healthy body from studying the diseased subject, from studying the disease itself. For this latter I have an unconquerable disgust (which is probably due to weak nerves and hypochondria) and I shall not be able to adapt myself to it. Even last summer I often tormented myself with the thought of having to overcome this repulsion for disease, and I believed that I could do so; at that time I was still too unfamiliar with the circumstances; now here, where I have exclusively to associate with medical men, where I continually enjoy their pathologico-therapeutical conversations, the impossibility has become absolutely clear and certain to me. I should never be able to follow pathology with my heart and soul, never be able to practice surgery. In order to convince myself completely and incontestably of this, I shall occasionally follow the different specifically medical, above all the pathological and therapeutical courses of lectures. As for the rest, I shall do all I can to see that this winter shall be as little wasted as possible. Kölliker's anatomy course (which, by the way, is the case with nearly all the other courses, has not even been announced yet, and, therefore, will probably not begin for a week or two) I shall nevertheless follow, and also diligently continue to practice dissection. Thus I contemplate anatomy purely from the standpoint of natural history and

(not of medicine!) as the natural history of men, and as such it can perhaps be of advantage to me should the day arrive for me to study mathematics and natural science. Perhaps next summer I shall also follow "physiology" and "comparative anatomy" from exactly the same standpoint. Beyond that I shall not take up any further courses, because those in natural history are in reality very few and not particularly good; *the very good* chemical laboratory ("practical chemistry exercises in the examination of organic and inorganic matter") with Scherer is exactly from 10 till 1 o'clock *privatissime*, while Kölliker is lecturing on anatomy (from 11 to 1 o'clock). That brings me to another thought. Shall I, perhaps, follow this chemical *privatissimum?* and drop Kölliker?

If I were to do this I would lose scarcely any time (and trouble) presuming (as I and, perhaps, others hope) that I can study natural science and mathematics (that is, if I have enough nous and mathematical sense, which, after all, is rather doubtful). Do me the kindness of speaking, as soon as possible, to Quincke, who has always been so kind to me, so that I may have the benefit of his advice. You, dearest father, might then be so kind as to write to me *immediately your own and Quincke's* opinion. Ask Aunt Berta's opinion also so that I may know what she thinks about it (N. B. the main question, upon which everything depends and for reply to which I beg Quincke, is, whether

mathematics is to be acquired with ordinary faculties, or whether special talent is necessary for it?)

While writing this after careful consideration (that is to say after careful consideration in as far as the short space of time in which a decision and a speedy resolution must be taken will allow), I really feel as though a burden had been lifted from my shoulders, as though, after a long while, I could once more breathe freely. I really believe that I would never have felt happy in the medical profession. At first I intended to conceal the whole of this struggle of feelings and moods from you, and push along with the medicine; however, after I had again in the evening and night of yesterday wrestled with myself, I came to the conclusion that in any case it would be better for me to write to you quite unreservedly and to beg for your advice and help. If, notwithstanding this, Quincke thinks it better for me to go on following anatomy, little time will be lost thereby. In that case I would occupy myself with chemistry, physics and zoölogy as well. (N. B. I have *not* yet joined Kölliker's lectures.) Anatomy in itself is certainly highly interesting. In order to get a preliminary idea about mathematics, you, dearest mother, might send me with the other things a book wrapped in blue paper, called "*Elements* (or Text-book?) of *Mathematics*" (or Geometry), by *van Swinden*, translated by Jacobi, which is standing on the first or second shelf in my little glass cupboard in the

bedroom. However, there is no hurry about this. If I have not sufficient nous for mathematics (which I hope is not the case), I would necessarily have to turn to Law, for which, probably, nobody has a real inclination. But, after all, this can be arranged at Easter.

If I follow only anatomy or chemistry now I have not lost much as far as money is concerned, because the lectures here, like everything else, are very cheap. Thus a course of lectures of three, four, five, up to six lectures a week, cost, according to the regulations, respectively, five, seven, nine gulden. In the practice of dissection I have wisely for the time being taken up only one part, the study of the muscles, which costs only ten gulden; so that in this also there would not be much lost.

Now, before everything else, I must make the fervent request that you will not be angry with me for having poured out to you so openly and unreservedly that which moves and occupies me constantly. As I have said, I believe firmly that already on account of my weak nerves I could never become a doctor. Bertheau, who, by the way, treats me very cordially, amicably, and nicely, continually assures me, however, that in the course of time I would learn to regard and to treat both the living man and the dead subject in the same manner, namely, "not as a man," but as something inorganic or, at least, as a vegetable. He added that he and many of his acquaintances had at first behaved with

still more timidity and weakness; indeed, some had even fainted at their first dissection, whereas, for myself, I was already going along quite excellently —and so on, in the same strain. But I believe I cannot succeed in it.

Best of parents, do not be annoyed with me on account of my fickleness, my indecision, my want of character, or whatever else you may call it. I should so very much like to possess a firm character, and shall always try to make you happy.

In old filial love, your faithful son

ERNST HAECKEL.

3. WÜRZBURG, *6. 11. 1852.*
Saturday evening.

DEARLY LOVED PARENTS,

For the last few days I have always been wanting to write to you, but I have waited till to-night, because I have continually hoped that a letter from you would arrive. First of all, therefore, I must tell you that from the middle of this week, since the beginning of the courses of lectures, I am as one newly revived, and that I am more lively than I have been for a long time. Indeed, I could scarcely have believed that kicking about for three months could have had such a slackening and discontenting influence on a man as I have now experienced from the time between the first of August and the first of November. Apart from this slight attack of homesickness that always appears regularly, par-

ticularly in the evening (and then often even very violently), I am now once more very cheerful, which I attribute chiefly to reading Humboldt's *Cosmos* and to Kölliker's splendid course of lectures. Already two days after my great lamentation epistle of the 31st of October had been dispatched to you, I decided to follow Kölliker's lectures, and so far I have not repented it for one moment. The subject matter, the lecture, the whole of Kölliker's conception, are so charmingly beautiful that I cannot describe to you at all with what pleasure I and many others follow his anatomical lectures. Hitherto he has given us a historical outline of anatomy, an outlook over the different animal and vegetable systems of the human body, and now to-day he has commenced an "external contemplation" of the same, which is highly attractive and interesting.

Kölliker himself is an exceedingly amiable and interesting man; besides being such a perfect specimen of a man as I have rarely seen; in particular, his black eyes are very fine. . . .

Including Kölliker's lectures, for which I was fortunate enough to secure one of the best seats, those I am now following are:

(1) A. Kölliker, anatomy of man, daily from 11–1 o'clock, costing 20 gulden.

(2) H. Müller, anatomy of the bones, joints and organs of sense, 4 times from 9–10 o'clock, costing 8 gulden.

(3) F. Leydig, microscopical anatomy or his-

tology of man, 3 times from 5–6 o'clock, costing 8 gulden.

(4) P. Siebold, dissecting, at optional times, costing 11 gulden.

Besides these, I shall still follow a three hours' public lecture on German archæology, and perhaps also on the study of cryptogams, if they should be given. Then, from time to time, I shall follow the only mathematical lectures that are given here and hear Scherer's "Chemistry in regard to Physiology." The osteology, etc., is tedious but exact, and I am able to get all the bones in my hand separately, from which I profit by drawing them, both from the front and from the back. I have taken up histology with Leydig, a young and clever privatdocent on the special advice of Kölliker. I shall leave dissecting alone for the moment until Kölliker has gone through the muscles in question; in any case, I have done with the arm muscles.

The division of my day has now become somewhat altered: At 7 o'clock I get up and take my coffee; read till 9. From 9 to 10 osteology, 10 to 11 drawing of bones, 11 to 1 anatomy, 1 to 2 dinner time, 2 to 3 coffee or attending lectures. From 3 to 5 idling about or dissecting or going for a walk, 5 to 6 histology, 6 to 9 working up my notes of Kölliker's lecture, 9 to 10 reading *Cosmos*, which really attracts me so powerfully that I feel angry with myself for not having thought of it earlier.

For the rest, with regard to the university, philos-

ophy and the other nonmedical sciences are very poorly represented. The building itself is also a funny old thing. My lectures are all given in the anatomical school, which smells barbarously of rotten meat and which is quite extraordinarily small and narrow so that we have to sit in it like pickled herrings; even the table at which Kölliker reads is so closely surrounded that he is scarcely able to get out. These inconveniences, however, will all be removed by the new anatomical school-building which will be opened during this month. . . .

By the way, if I have not enough odors to satisfy me at the school of anatomy, the glue-manufacturer opposite me and the soap-boiler not far off would afford me a satiety of such delights, as, indeed, they do. In fact, the whole town is one stinking nest, where one perceives one's olfactory nerves to be assailed everywhere in the most varying and unpleasant manner, particularly in the evening; perhaps for this reason the place is called "Würzburg!"[1] . . .

4. WÜRZBURG, *Sunday early, 14. 11. 1852.*

MY DEAR PARENTS,

When I was at the post office at 10 o'clock on Sunday I thought: "You must try whether you cannot find an evangelical church," and I arrived at one just in time for the last verse before the sermon began. The text was taken from the parable

[1] "Wurze," means spice or seasoning.

of the servant, the whole of whose debt was forgiven by the master, and who then caused his fellow-servant to be cast into prison on account of a small debt. The preacher, an active young man, first spoke about the infinite grace of God, and then how we should and could show ourselves worthy of it. The sermon pleased me immensely, partly on its own account and partly on account of the great congregation, which really inspired one for devotion. It was rather a plain church, with a very simple, lofty aisle as wide as that of Merseburg Cathedral, but at least twice as long. The whole of this immense space was so thickly crowded with people (at least from 800 to 900), it being the only Protestant church here, that, in the most literal meaning of the word, they were standing as far as the entrance door. You need not imagine that like Friedrich, I would have concluded that simply because many people were present the sermon was a fine one; but I had never seen such a large congregation, and in the middle of a Catholic country such a sight in its devotional calm is really uplifting.

When I returned home I found your parcel of books: I would have been very glad if van Swinden's *Elements of Mathematics* had been among them; this, however, together with the Echtermeyer, can now wait till you have the occasion to send me something with them. That you mean, after all, that I should take my *Dr. medicinæ* has,

speaking honestly, somewhat astounded me; I think I would much rather take the *Dr. philosophiæ* (do not be shocked, dear little mother, regarding philosophy I do not mean it quite seriously). Yet I shall reserve all I have to say concerning this important point for verbal discussion at Easter. At least I am glad that I know what I shall have to do this winter, and I will hammer away at anatomy as well as I can, in which the excellent course of lectures and the good opportunities for dissection will aid me in every way.

As it was a fine day (the opposite of to-day) on Sunday I went for a walk in the afternoon with Bertheau and several of his friends to Dürrbach, a village which lies beyond the next vineyard on this (right) bank (¾ of an hour away). We enjoyed the magnificent view over the town and the fortress from the top of this very steep ridge; but most beautiful of all seemed to be the Main, which here in a graceful bend flows at the foot of the height, and peeps through further above between the high banks in the distance. Just opposite the elevation, on the top of which we stood, a convent is nestling most romantically in the valley; there were several others further down, as, indeed, churches and convents are everywhere to be met with here in numbers. On the whole, this week has passed rather quietly and prosaically for me, as I am now getting more accustomed to the work which at first did not run quite smoothly; I cannot

say that it is yet going particularly well, for homesickness, which I believed a week ago I was overcoming, has begun to reappear with great violence; especially when I am sitting alone in the evening, you and my little couple from Ziegenrück [his brother Karl and his young wife] are always running across the paper. In spite of all effort properly to collect the few thoughts which are left to me after all my sorrows and gloomy meditations, I am not even capable of reading two or three sentences, even Schleiden [*The Life of the Plant*] or Humboldt, consecutively without their running away with me again, especially to Berlin. I believed that it would not be so bad here as at Merseburg, where every locality and object recalled my having lived together with you there, but here quite another thought, I might call it a more ideal one, of homesickness makes its appearance. However, I believe, after all, that it is quite good as it is, and I am already learning something of the advantage of being alone. I have also been a few times in the evening with Bertheau and his acquaintances to a tavern, but it does not please me very much, not because they were perhaps somewhat rough; on the contrary, they were much more decent than I had expected; but almost the only entertainment that they know is cards, especially whist, for which I have no special inclination, and almost the sole conversation is on technical medical subjects, chiefly surgical operations, of which I am now rather sick. On the

other hand, I have renewed a very nice Berlin acquaintance; it is with "La Valette Saint George," of Cologne, whom I met in Berlin, although I only knew him superficially, during an excursion. He also knows Wittgenstein and, like myself, only studies natural science; he will, however, remain here for several terms, because he wants to devote himself, in addition to chemistry and botany, chiefly to comparative anatomy, the main branch of zoölogy, and for this purpose requires human anatomy as well. He, also, has no special liking for mathematics and later on will take the degree of *Dr. philosophiæ*, for which purpose, as he tells me, he must undergo an examination in four subjects (for example, botany, chemistry, physics, zoölogy), but, nevertheless, it is necessary to be absolutely proficient in one only. Then, perhaps, he would like to acquire the right of giving academical lectures as a privat-docent; this would be a good thing for him, as he has a private income. . . . Yesterday I passed a very delightful evening. I was at the "Physical Society," of which the president now is Virchow, and of which all the resident notabilities are members; there are other non-notabilities belonging to the branch of natural history. However, students are also admitted. I obtained my introduction through my neighbor in Kölliker's course, a Swiss, a Dr. phil., of the name of "Gsell-Fels," who knows Kölliker, and who is very friendly and obliging to me. As I heard

yesterday, he is already married and has not been here long; I have not heard what he is doing. The Physical Society devotes its activities, as most of them (including the Geographical Society of Berlin) do, in addition to correspondence, exchange, etc., chiefly to free lectures, of which three were delivered yesterday and which lasted from six to nine o'clock in the evening. The first lecture was delivered by Professor Schenk, the resident botanist, whose lectures I may yet, probably, follow, a very genial and clever young man, but who unfortunately has a somewhat bad and uneven manner of lecturing, on the subject of his botanical holiday trip to the lower Danube countries, Wallachia, Hungary, Transylvania and the Carpathians. The flora of these districts accords in the plains nearly throughout with the flora of the steppes of Southern Russia, in the mountains with the Alpine flora of the Caucasus. There are few woods, as they have generally been cut down or burnt down in order to provide pasture land for sheep; nevertheless, there is a great quantity of impenetrable underwood. The mountain districts are generally very barren; often for whole days' journeys only one single species of grass (*Agrostis rupestris*), in the steppes often only *Poa glauca*. In some stretches, especially around the soda lakes, salt-plants. Of cultivated plants, exclusively vine, wheat, maize. In addition to these and many other special botanical results, he also spoke about many highly interesting geo-

logical and oryctognostical subjects, for instance, concerning the occurrence of important mud volcanoes in Hungary, about which till now no one has known anything. Further on he spoke much about the Saxons in Transylvania, a subject which would have been of particular interest to you, dear little father. Till the present time, the Saxons have always preserved themselves very pure, speak the old low Saxon (while their children are not taught high German), still observe old German customs and habits, and are still very much attached to Germany. Exteriorly they are immediately to be distinguished from their Slav neighbors, who also wear neither boots nor shoes, by their long shirt, while the others wear a short ditto *over* the trousers. It is very remarkable that in answer to all questions as to their origin they stoutly and firmly maintain, as is also to be read in their old documents, that they have been led to that locality by the Pied Piper of Hamelin, which myth is, as you know, also quite common in Germany.

The second lecture was delivered by Professor Virchow, also about his holiday trip, but which, however, dealt with quite another subject, namely cretinism in lower Franconia. He referred to a mass of data, highly interesting to a medical man, important also from the social point of view, the repetition of which, however, will not amuse either of us, because, for example, he recommended us to take a journey into the districts that are richest in

cretins, for the reason that it is only there that one can discover what caricatures nature is capable of making of man. Among others, he has seen a twenty-one-year-old female cretin 84 c.m. (2½ ft.) high, the head of whom had a circumference of 54 c.m., and whose feet were 17 c.m. long—and other examples. By the way, it is really astounding what a number of cretins there are there; in one small place he found over twenty of them. They are particularly numerous on the slopes of the mountains in the neighborhood of the river. They are not to be found in the dry plains and in the mountains themselves. He is of the opinion that cretinism is due chiefly to local causes, to miasma or something of that kind.

The third lecture was delivered by Professor Osanne, the resident physicist, about some of his labors in the realm of electricity. He had constructed, among other things, a new electrometer. At first he gave a tedious mathematical explanation, of which I understood little, because he has a very bad voice; then he showed us some very interesting experiments. The first one was: if one suspends zinc in a weak solution of sulphuric acid, hydrogen, as we know, is developed; now if one brings the zinc from which the development of the gas gradually proceeds into contact with platinum there suddenly arises a most intensive stream of hydrogen gas, which is liberated into the air. Then he showed us a very strong inductive rotary apparatus, and

experimented with it on himself and on Professor Kölliker. On completing the chain, one immediately experienced most violent cramps and contortions of the limbs.

The ordinary members still remained for the soirée, which is said to have gone off very well; we, La Valette and I, cleared out. What struck me as being particularly pleasant at the meeting, was the remarkable ease and lack of constraint with which the professors associated with one another as well as with other people, of which one has no idea in Berlin, especially among professors. . . .

For the moment there can be no thought of a piano in my room, because every corner is so thickly crowded that I can scarcely turn round myself. . . . But opposite to me there lives one of Bertheau's friends, who has permitted me to play on his beautiful piano as often as I like. . . .

I must still tell you of a great pleasure which I experienced the day before yesterday. In the twilight I took a walk on the square near the Main, where the ships unlade their cargoes; suddenly I saw on the shore among some shrubs the rare species of the cabbage family (*Brassica nigra*) which I first found at Merseburg. Now when I had plucked it, I discovered on the ground, under where it had been, a strange, very nice, equally yellow-colored, cruciferous plant, related to it but still quite unknown to me. When I classified it at

home I found it to be the rare *Diplotaxis muralis*: immense joy! . . .

I have not become more closely acquainted with Kölliker. He only spoke to me when I took my place. By the way, he is said to offer his recommendations for the "Harmony" to nearly everybody. It is already quite crowded there, and probably no more will be admitted. As far as that is concerned I am not at all sorry about it, because in such gatherings enjoyment is only possible under certain conditions. For my part, I have now become melancholy and glum at every ball; I do not know why? I am in the same state as the man in Wallenstein! (I believe it is Max Piccolomini): "You know that great crowds always make me silent!" . . .

Hearty greetings and a kiss from your faithful old boy

E. H.

5. WÜRZBURG, *19. 11. 1852.*

MOST DEARLY BELOVED FATHER,

Again, in this year I can only offer you, in writing, my most fervent congratulations and heartiest greetings on your birthday. May God preserve you to us for a long time yet, for a long time so fresh and bright; above all, may you have real happiness in your children; in one of your boys you have already a sure guaranty that he will always be good and happy. The other, unfortu-

nately, has till now shown little enough prospect of equaling his brother very soon, especially in regard to order, perseverance, and firmness of character; nevertheless, you may feel absolutely certain that he will endeavor most seriously to become an honest man and also to become worthy of his parents and to be a joy to them. He will certainly take all possible pains to overcome his weaknesses more and more.

How happy it would make me to be with you on this our greatest family day of festivity I need not assure you; it would also have made me very happy to make you some kind of present, if it were only a well-executed drawing; especially as at the present time I am in good drawing practice, and it is almost the only real happiness that at all times succeeds in driving away my evil thoughts. But my time has been very restricted this week, and it is already too autumnal and cold for me to be able to make a landscape sketch in the open air. You will see, however, by the inclosed outline sketch, which I made yesterday afternoon in the most horrible autumnal weather at the landing stage of the steamers, that my good will was not lacking; I had crouched down in a somewhat uncomfortable position to protect myself against the violent wind, behind a stack of wood, which you will observe in the left-hand lower corner.

The big castle up above to the right is part of the citadel. Further down to the left, between it

and the very ancient church which stands on the other side of the bridge, lies the "Käppele," the monastery to which I took the beautiful walk during the first days I was here; an avenue of small chapels in which the story of the passion is depicted leads up to it. Underneath the citadel, on the left bank, lies the suburb: the Main quarter. Würzburg itself, which must be left to your imagination, lies opposite, to the left of the bridge, on the right bank. Of course, the sketch claims neither artistic merit nor to have been faithfully executed. It is merely intended to be a messenger to tell you of the love with which your child is always thinking of you, and, above all, how he will dream himself longingly over to Berlin at your coming festivity, when also those who love him will not forget him. . . .

Be very happy and gay, and when you drink the health of your distant general "*que nous aimons*" think of your faithful old boy.

ERNST HAECKEL.

6. WÜRZBURG, *19. 11. 1852.*

MY DEAR MAMA,

I have still to add to my words to our dear "birthday-child" (Geburtstagkind), dear papa, a specially fervent greeting to you. Probably you will both feel very lonely; but remember that your children, at least the younger one, is no better off; remember, at the same time, that he will always

be with you in spirit, and that when he becomes low-spirited and despondent it is the thought of his parents that always gives him renewed courage.

I have rather a good deal to do now, as I have been dissecting; in this Kölliker also helps the individual, and tries to make it as pleasant as possible for him, during which time he converses in a very friendly manner with the students. The second question he put to me, after I had answered the first, was: "You are probably from Saxony?"——!!

This week the *privatissimum* at Professor Schenk's: "Microscopic demonstrations of vegetable tissues," has also begun. I am exceedingly glad that I have been so lucky in this. Besides myself, there are only two who take part in it, and I have every prospect, at last, of making the acquaintance of a real botanist, which has been my ardent wish for a very long time. These demonstrations take place on Tuesdays and Thursdays from six to eight o'clock in the evening. During them we are each provided with a splendid microscope, under which he places for us his own excellent preparations made by himself. Then we draw them while he explains them to us, and we are allowed to question him as much as we like,—question till we understand everything. You may well imagine what happiness that gives me and how important it may be for me. "Schenk is very amiable, and one can learn much from him, for he is quite an excellent botanist;

only not very well known, because he is too lazy to write something really good, although, as a matter of fact, he could very easily write a great work; nor does he present himself as he really is; one has at first to penetrate more deeply into his mind. It is a great pity that he has so little distinctness in his method and in his character, and that in many respects he is still like a child." This character sketch of Schenk, which my neighbor, Dr. Gsell-Fells, who knows him very well, gave me I found completely confirmed, and in the last sentence I was immediately reminded very strongly of a certain E. H. Well, if only some day the latter will get as far as Schenk! . . .

Write again soon to your old

E. H.

7. WÜRZBURG, *Saturday, 27. 11. 1852.*

DEAREST PARENTS,

Yesterday I received your parcel so full of affection, and the material contents of which have given me scarcely less joy than the intellectual ones, although I had already longed very much for news from you and as to how you had celebrated our family chief's birthday, and for which I return my heartiest filial thanks. For my part, I have celebrated the feast of my dear old father much more brilliantly than I myself, and surely of all of you, would have thought; now guess how? Imagine—with *champagne!* This is how it happened: at

first I made the resolution that I would celebrate my father's festival quite quietly, by going in the evening to an inn and there devouring a beefsteak with a beaker of "Steinwein," in honor of his good health. I had also calculated in advance on a good share of homesickness, and how I would long so vainly for you; the latter I naturally experienced to some extent, but, on the whole, it turned out quite differently. That is to say, when I received your dear letter on Sunday afternoon, in which you, dear mother, asked me to invite a few acquaintances, I quickly made up my mind, and on the following morning invited Bertheau and La Valette to be my guests. As I really did not know whence to obtain the wine, B. offered to procure it, and, indeed, in the evening came laboring under the burden of — two bottles of Schalksberger at 24 kr. and a bottle of Frankish champagne at 1 gulden, 24 kr. You may well imagine that, for various reasons, I was a little bit shocked; yet I took courage, and with my two friends, who also found it to be of excellent flavor, set myself bravely to work, and at 12.30 in the night the three bottles were emptied to the last drop!! In spirit I see you before me, dear mother! how frightened you are and how you clasp your hands over your head; you are surely fancying all kinds of "after effects," etc., and you pity your poor boy who has been so terribly entertained; but nothing a bit like that happened; exceedingly happy and comfortable, we

sat together in my inn (N. B. in reality we were four, because B. had his dog with him, a frightful, ugly, but very comical poodle, which had to eat the skins of the sausages for my papa's good health, and who had to empty the dregs!), and we conversed with one another and chatted to our hearts' desire. Naturally, we thought much of those in Berlin, and many toasts were drunk to the long life and welfare of my dear old father. In the afternoon, in company with my landlady, I had bought sausages, which, with some sandwiches, were excellent accompaniments to the wine, and to complete the feast I had bought half a bread tart, for 30 kr., from the confectioner's. La Valette, who is altogether very considerate and abstemious, drank least; B. most; I kept in the noble middle of the street, but drank at least a good bottle, without it having even the slightest effect upon me, to the greatest astonishment of my friends, who had little guessed that I possess such a capacity; they thought that I would have sunk under the table after the third glass, and when they saw me quite imperturbably maintaining an upright position they sang the praises of the father, whose son could stand so bravely such a magnificent essay of arms on his birthday, such an excellent *primitiæ armorum*. For myself, I was even much more astonished, and can explain my recently proved talent for drinking solely and only by the fact that I am in every respect the true son of a gallant woman of the Rheinland (*sit*

venia verbo, dearest Mama). In this I had observed myself carefully and did not feel the slightest ill effect; it was only after the third glass of sparkling Frankish wine that I felt the *arteria temporalis* pulsate slightly, but which immediately ceased after I had sipped some water. The next day Bertheau slept till 10.30 o'clock. Although I also slept splendidly after I had at length gone to bed at 1.30, I rose the next morning, as usual, at 7 o'clock, and during the whole day was as happy and bright as possible. Never in my life would I have thought that such a jollification could have had such good consequences, and I am still quite proud of my first drinking test. In other respects you need not have the slightest anxiety that I have imbibed a taste for it or that now I shall more frequently tipple wine; on the contrary, I have now made up my mind to fast (if only to mend the great hole in my purse, which has also been considerably widened by a few pots of egg flip), and I shall now make a start to-morrow by not drinking the little bottle of "Leistenwein" which every midday guest at the Harmony gets on Sunday and which costs 6 kr.

After all, I have had many delightful hours this week; Schenk has begun his other course, namely about cryptogams (these are the lower nonflowering plants: ferns, mosses, lichens, fungi, etc.), and as it occupies two hours (on Tuesdays and Thursdays from 4–5 o'clock), I have still taken it up; besides myself and La Valette there are only three others.

Need I tell you what happiness this affords me? Among other things it leads us into the hothouses, and there we are shown the most beautiful tropical ferns, etc. But now I have taken up enough courses: 30 hours, in addition to 18 hours of dissection. The latter, however, I have not done too diligently. For instance, this week I could not, because I had slightly cut my finger again. Also there was a complete want of subjects this week; consequently, great dissatisfaction among the students (who could only be calmed by the assurance that it was impossible to poison people in order to obtain subjects) and great perplexity among the professors; even Kölliker in his lectures on the muscles of the head and neck could only show us specimens in spirits. Besides this and the botanical course, I take a special pleasure in the microscopical anatomy of men, which is interesting in the highest degree and which is remarkably well demonstrated by the young privat docent Leydig. He also shows us very beautiful microscopic preparations. In addition, I have still procured myself Kölliker's *Study of Tissue*, a magnificent and most important book. (I have also had to buy myself a manual of anatomy for 8 fl.!)

Last Sunday I went again to church, but this time the preacher was an elderly, rather prosy man, who, according to my idea, used far too many words and phrases. It happened to be a special harvest thanksgiving service. To-morrow I hope

to meet the former preacher again. Saturday afternoon was dull; first I was with B.'s friends in "Smolensk," a coffee-house at the foot of the vineyards; then I went to the gymnasium, which I have discovered behind my dwelling and where from time to time I exercise the weak muscles of my arm (that is to say, my *Triceps brachii* is very weak, and the *Biceps flexor* not much stronger). On Tuesday evening I walked for a long way on the right bank of the Main with La Valette; it was already dark, the Main was very much swollen after the heavy rain, and the heights around were very bare and autumnally bleak; one compact mass of cloud entirely covered the skies; the whole was very attractive, wild and gloomy, particularly as there was no living being to disturb the repose of nature. It was altogether different on the night before last; a pure, cloudless sky, the most beautiful full moon, really ethereal air, and a delicate veil of mist overspread mountain and valley. I left my lecture only at eight o'clock, and at nine o'clock I still wanted to go for a walk with La Valette to the beautifully situated monastery, the Käppele; when, however, we reached the end of the town and, having passed through the gate, wanted to ascend the hill, the fortress guard stopped us, and *nolens volens* we had to return. But, nevertheless, we clambered at random on the citadel hill for over an hour and were happy to reach the highest place whither one may go without being stopped

by the guard and whence we were still able to enjoy in fullest rapture a magnificent view over the town, which lay in solemn silence, in a hazy mist, at our feet, dark or only illuminated by a few lights, the stream roaring deep down below us and the moonlit heights around us I cannot tell you what pleasure such joy of nature affords me, whether it be smilingly bright or dark and dreary. Then I suddenly feel myself exalted above all the anxieties with which I so frequently torment myself all the day long; it is as though the peace of God and of Nature, for which I have often sought in vain, had entered suddenly into my breast. What the contemplation of the world's history and the common fate of mankind as a whole is to you, dear father, so is the general as well as the particular contemplation of nature to me, but bestowed in a still higher degree. I believe I am far too selfish indeed to be able to take an interest in political affairs. On the other hand, I find another high joy and comfort in poetry. It is only recently that I have learned to value the latter so greatly, in fact, since I have gone out into the world. It is poetry that uplifts the man above the dust and worry of everyday life, and drives evil thoughts away from him. . . .

I would have had a very good opportunity now to become better acquainted with Kölliker. He was looking out for a student who "would be in the position to be willing to make anatomical draw-

ings for him." At first I felt inclined to apply, but he has now obtained rather an unskillful one with whom, however, he is satisfied.

By the way, drawing gives me very great pleasure once more, and, in want of a better subject, I cheerfully draw bones after nature. . . .

Your old faithful boy

E. H.

8. WÜRZBURG, *5. 12. 1852.*

MY DEAR MAMA,

First of all this letter is specially addressed to you, as the private Treasurer-General of the house of Haeckel. You will surely not have expected such a black-eyed bill so soon, any more than I would have done. I can assure you that when, on the first of the month, I opened my purse with the object of paying the different bills, *in specie* those for the dining table and for mine host, I received no small shock when the entire balance, after deduction of the *summa summarum*, amounted only to 3½ fl. No matter how often I went through and added up the whole story, it always remained exactly as it was and is, and my only comfort concerning this terrible emaciation of my cash is, that it was just in this month that I have necessarily had very many extraordinary expenses, as, for instance, the journey here, installing myself here, the fees for the courses. How it has all accumulated to this amount you will see by the detailed account

I have inclosed. I had taken with me 50 talers in gold and 50 talers in silver, which together amount to 187½ gulden. Now as the expenses amount to 184fl., I have only 3½ gulden left, and nothing remains for me any longer but to resolve firmly to manage more economically and in some ways to restrict myself. Thus, for instance, I have given up drinking coffee in the afternoon; I will go out no more in the evenings (for if I meet acquaintances then I cannot get off under 10 or 15 kr.), but (although she doesn't do this under 6 or 8 kr.) I shall have some soup made for me in the house by my landlady (O, *dear* landlady!). I could also live more cheaply at midday, perhaps for 18 kr., while at the Harmony I pay 21. But in that case I would miss the companionship of Bertheau and La Valette. However, after all, it will *have* to be done. . . .

I regret very much, dear mother, that you have been so upset over the braggadocio about papa's birthday; but I promise you that I will never be guilty of such extravagances again, however well the end may be. Wine-drinking is altogether a superfluous thing and is never profitable, even if the wine is as cheap as it is here. Now, probably, you will be upset again that my money is already finished, but do not forget that you, dearest mother, have yourself admonished me never to be avaricious, which I had a great inclination to be, and that I should write to you immediately and openly when my cash came to an end, so that I should not

learn to get into debt. Therefore I have done so immediately, but (side by side with my request for speedy help) I promise henceforward to manage carefully and economically. You can believe me when I say that such a begging letter, at least to my thinking it is partly so, is very difficult for me to write; nevertheless, the money has been spent and you will see from my account how little it is my fault that it has gone so rapidly. I truly wish tenfold more, my dear old mother, that you would manage my household for me, so that I need not bother myself about income and expenditure. But these are the joys of a bachelor's household! . . .

At least, my dear old mother, allow yourself to be heartily kissed and embraced by

Your old ERNST.

9. WÜRZBURG, *5. 12. 1852.*

DEAR FATHER,

First of all I have a bone to pick with you about your having been vexed so much about politics. This, my dearest little father, is almost as bad as my worrying, so uselessly and vainly, about my future. Without any anxiety on our part, God will guide the affairs of the single individual, as well as those of the State, to a good end. The more topsy-turvy things are now the sooner must they become better and the crisis be reached. Of course, I can very well imagine how the Chambers in your immediate neighborhood, with their stupid

nonsense, cause you much annoyance, but in the entire matter I would take up a much more objective standpoint. You write to me that you feel the burden of old age, but at the same time its other qualities leading us to a more calm, more objective contemplation, and in the same line, with the entire enthusiasm of a youthful patriot, you fall upon the poor Chambers and the "gracious" King! Only consider that your wife and children stand much closer to you, and that you hurt them when through anger you damage your health! Rather do as we do here, we who never trouble about either the Prussian or the Bavarian Chamber, but who at the utmost, read the *Kladderadatsch* and the *Fliegende Blätter*, and vastly amuse ourselves about "Napoleon the Little." . . .

It appears very strange to me to spend the long evenings here in solitude. I always think at such times how my dear parents are, perhaps, at the same moment reading to one another: Shakespeare by Gervinus, or Wilmar's *History of Literature* or some other beautiful historical work; probably on some occasions Mama might be very anxious when you go for a walk in the dark and if you should not come home at the right time?

Speaking of books, I think that Immanuel Kant's complete works, which cost 25 fl. when new, are now to be bought here for 8 gulden. It is not, of course, the good edition by Rosenkranz, but that

by Hartenstein; nevertheless, quite new and in good condition. I thought at first that I would buy it for you, but then I remembered that probably grandfather will have it already? But all the same, if you would like it, let me know. I think I shall also have to study Kant thoroughly.

Now once more the request, that you will not take politics too much to heart and that you will continue to love your old faithful boy E. H.

10. WÜRZBURG, *Saturday, 11. 12. 1852.*

DEAREST BELOVED PARENTS,

What would I give if at this moment I could take you in my arms and could pour out before you the overflowings of my heart; my poor brain is once more suddenly crossed by so many encouraging and fresh thoughts that again I feel myself quite newly strengthened and full of energy, in spite of toothache which has tormented me throughout the week and is doing so still. "The sunshine follows the rain," and after great sorrow there always comes great joy; this is a sentence I see realized in me every week. Yesterday was a day of suffering, in which neither physically nor mentally did I feel well; to make up for it, I thoroughly slept it out; have briskly been drawing with the greatest pleasure this morning, then heard a magnificent lecture, and when I came home in the afternoon from a coffee-house, where I had been reading *Kladderadatsch* with great delight in company with Bertheau and

La Valette, I found on my table—guess what!—a large parcel from Merseburg. In addition to a quantity of dried plants, it contained such a budget of letters that I had not had time to read them half through when half an hour ago your longingly awaited dear letter took me by surprise. Hearty thanks for it, as well as for the remittance, which I hope to make last twice as long as the last amount that you gave me. At 6 o'clock, in order to omplete the happiness of the day, I shall go once more to the Physico-Medical Society, which is holding its meeting to-day for the first time since I was there; there was a meeting a fortnight ago, but it was a private one, when the members had their annual festival celebration, and the accounts were presented. But I see that my time is up. Good-by till later!

Sunday evening, 12. 12. 1852.

I have only now found time to continue the letter I began yesterday to my dearest old parents. Yesterday evening it was again very interesting. Kölliker, in particular, delivered a very fine, clear and interesting lecture about the results of his holiday journey to Sicily, which he took in company with Professor Müller and Doctor Gegenbaur of this place (zoölogists and anatomists). Their aim had been chiefly directed to the investigation of the lower marine animals, the anatomy, morphology and physiology of which are highly attractive and important. For this purpose they had spent a very

long time in the Straits of Messina. Kölliker began by speaking generally about the latter, particularly about Scylla and Charybdis, the waves of which are in constant and violent motion, even when the wind is perfectly still. He attributes this mainly to a strong current of the sea, which at one time flows from south to north, at another *vice versa*. Then he described and drew many new polyps, medusæ (jellyfish), molluscs, and other similar little creatures, also strange, small, exceedingly low-organized fish, some of which he had newly discovered and others he had observed more closely.

One important discovery he had made on this subject simultaneously with our Johannes Müller, his teacher, who at the same time (accompanied by Lachmann) made similar investigations in the Adriatic, near Triest. . . .

Now back to the treasury of letters I received yesterday; the first and longest (4 sheets long!) was from Ernst Weiss, who had sent the parcel off. It seems to me really touching with what true attachment the old boy reports and communicates everything to me. How in his struggle against his dry stoicism he reveals his deep, serious mind, and then how he offers me his friendly advice, and how he comforts me in all my scruples. He also pours out his heart about the materialism of his school-fellows and about his loneliness, Weber's visits from Halle being all that remind him of our former association and partly supplies its place with him. Most espe-

cially, as this is the case with me also, he misses somebody to whom he could pour out his natural scientific and, *in specie*, botanical heart. Inclosed with it is a letter from Osterwald, which I want to give you literally.

Only a few lines, dearest chum, to prevent you from thinking that I have quite forgotten you. Unfortunately, up to now I have not found any time for a detailed letter, because a greater scientific work on the *Odyssey*, in which I see nothing now but spring, claims my attention very much. Weiss has already told me of your scruples with regard to your future. Already, a long time ago, I had predicted to your father that I do not believe in you as a medical man, and for this reason I am not at all surprised at the resolution you have taken to change your profession. If the resolution is now ripe, then carry it out without regret. There is no doubt that you will learn enough mathematics, and natural science can still remain as the chief thing. Do not shut yourself up against *humaniora*, keep your mind open to "things in general" and then steer toward the academical—and if that does not work—toward the career of a schoolmaster. Indeed, to be a schoolmaster is surely to eat sour bread; but, in any case, one has much more joy as such than, say, as a stone-breaker, particularly if one has such excellent people as pupils as yourself, my dear chum, or has had them. It would be very nice if some day you would have to pass the probationary year in Merseburg! Good-by for to-day! Hearty greetings from my wife; little Minnie is really funny and Ernst quite a darling. Good-by. In old friendship,

Yours,

OSTERWALD.

You can scarcely believe, dearest parents, how these few lines have stirred me to my innermost depths, and have contributed to a feeling of contentment. I felt nearly as happy and calm, as restful in God, as when I received Aunt Berta's splendid letter. The only thing that really keeps me up now and does not allow me to despair of myself is, that such magnificent people as Osterwald, as Aunt Berta, as you yourselves, dear parents, as my excellent brother, together with my able old friends, Weber and Weiss, do not abandon me, but stick to me, and think of me with love and sympathy. Almost more fervent and cordial than the preceding one, is a letter from my dear faithful Weber, who also opens out to me his great mind, his deep, overflowing heart which lies so completely hidden and locked away from the outer world. He begins also by consoling me about homesickness, and describes to me in a really poetical, thoughtfully simple manner, how he was tormented by it himself for nearly six long years, in fact, as long as he was at school, as often as he went home for his holidays, and how at length he has now overcome it, and has even acquired a cheerfulness which the most cramped conditions could not suppress. (Oh, when shall I have reached that stage!!)

Then he (who, in reality, only pursues it for nature's sake) gave me some quite special advice with regard to the study of mathematics, how I should go on with it, and how he likes it himself.

Dear little sketches (chiefly of beautiful foliage) are inclosed in this precious letter, as well as some dried plants and a letter from Gandtner to Weber, which the former had written to him when he had asked him at Easter '52 for his advice about a study he wished to take up. (Gandtner is also entirely of the opinion that Weber—and, therefore, I as well—should study mathematics and natural history with a good heart. I shall, by the way, write to G. in a few days.) The fifth letter is from Finsterbusch, also couched in very cordial and friendly terms, but with a sense of mental superiority and a pronounced character which for a long time I have suspected in him and which makes me very glad for his sake, although it deeply pains me when I compare myself with him and realize how in my case nothing at all ever will or can become of me. Before all, he warns me quite rightly "against a morbid, mawkish condition in which one too easily takes a pleasure, strangely enough delights in embittering one's life, and allows it to pass unprofitably." The following is also perfectly true: "Like you, when at school I had a mistaken idea about studying. I regarded the deep absorption into it as being the highest thing in studying, and, in a certain way, it is so. Only one must not confound it with always remaining in a state of absorption in it"!! At the same time he urgently advises me to move about among people with my eyes open, to make acquaintances, to seek a friend; not to be afraid of any exer-

tion, etc. All this is surely very true, but more easily said than done. At least, I perceive that the more trouble I take to pull myself together the less I succeed.

How happy is such a man by reason of his self-dependent character!

Last of all there was still a letter from Hetzer, in his usual sarcastic and good-natured style. Now with regard to the main question concerning my future career and course of study that is dealt with in detail and with great sympathy in all these letters (N. B. You must know that in a letter from here to Weiss and Weber I also poured out my heart and asked them for advice), there is only one opinion in all of them and one which you will find is concisely summed up in Osterwald's words. It is little Weiss in particular who urges me with positive insistence to follow his advice, that of his friends, and of all reasonable people, and not to torment myself with doubts. It is almost ludicrously touching how he emphasizes with certitude that I should become a professor, most likely of botany. That the medical profession has not lost a shining light in me he is, and has always been, in agreement with me and all the others. . . .

If I shall now give you an account of last week I find that it has offered me a good deal of variety. At least I have been one evening (hear! hear!) in society (!). It happened in the following way: When I went home in the evening with Schenk after the

microscopical lecture, he asked me whether I liked music. When I replied half and half in the affirmative, he invited me to his house for next Wednesday evening. As "a well-bred young man" (!) I went there on the Wednesday morning in a black swallow-tailed coat, trousers (which on this occasion made their first appearance, and were, therefore, not brought with me in vain like the white ones I took to Teplitz) and gloves (Bertheau wanted at all cost to make me wear his black hat as well; this, however, I objected to), in order to pay my respects to Frau Professor Schenk. Fortunately enough she was not at home. The evening passed in a very pleasant and homely way, and in many respects it has for once done me some good.

N. B. If you should again be sending me something, please send me the *Odyssey* with it; I believe it is on my second shelf in my glass cupboard; I have often a great longing for it! . . .

11. WÜRZBURG, *21. 12. 1852.*

DEAREST PARENTS,

Your anxiety about the apartment has become quite superfluous through the fact that already last week I have taken a new one. It is situated in district I. No. 358, not very far from my present one, and consists of a very comfortable, although small, room with a side chamber adjoining it, which is nearly three-fourths of it in size. It has two windows and is nicely furnished; the rent

amounts to only 5 fl., because they have taken off 1 fl. for the reason that I have brought my own bed. I must confess that the view into an old and dark lane, so narrow that I could (as in the old town of Frankfurt) nearly shake hands with my opposite neighbor, is not very nice. But, after all, one has to seek in vain through the whole of Würzburg for free and pure air, except in the courtyard of the hospital, the Botanical Gardens and the Main quarter on the other side, where the poor fishermen live. . . .

Concerning my "vital question" I think that we had better spare ourselves further correspondence about it, and postpone it until we can talk it over verbally at Easter. Half of the bitter time of separation has now already past. About the idea of a schoolmaster, by the way, I do not find it, dear father, as bad as you do! For one thing, we are not put upon this earth merely to lead a comfortable and pleasant life. One can be content if one has just one's daily bread. Ruminating over one and the same subject in front of the ever newly arriving pupils would surely be a miserable thing for a long time; but just consider how the academical teachers are in almost the same position. And then how uncertain and full of doubt is an academic career unless one is endowed either with exceptional talent or considerable means! On the other hand, however, La Valette has quoted to me a whole string of examples of such teachers who

were well instructed in a few branches of science, as, for instance, botany and zoölogy, or chemistry and physics, and then found very pleasant and remunerative positions in the Rhenish Secondary Modern Schools, where such men are very highly estimated. The idea of the career of a practical chemist is not to be thought of in view of my totally unpractical disposition. O *jerum praxis!* As for the rest, I shall dedicate the remaining part of the term entirely to anatomy, for, in any case, there would be no time left for anything else, and then we shall see all about it at Easter! . . .

N. B. There are certain curiosities that are the best part of me in the study of natural history; thus, for instance, I can look through the microscope with the left eye while with the right I can draw what I see. Regarding this, a short time ago (in a microscopical anatomy lecture) the docent, Herr Leydig, broke out in the greatest astonishment in the middle of his lecture, because he had never seen such a thing before; most people are only able to look through the microscope with the right eye. (As a matter of fact, I now feel, particularly in the evening, how it fatigues the eyes.) . . .

The presence of the Emperor of Austria will not have been very agreeable to you, my dear old father; you would rather like to devour him as well as the whole of the Junkers; that would be indigestible stuff, like the coagulated white of an egg; take care of that! . . .

Once again a thousand greetings and kisses from your faithful old boy

E. H.

12. WÜRZBURG, *25. 12. 1852.*

DEAREST BELOVED PARENTS,

I hope you received my little parcel in as good time as I received your large one; I really doubt whether you have had even half as much pleasure over mine as I have had over yours, for I can scarcely believe that anybody has ever received a more beautiful and more desirable present than the one you have sent me, or that anybody could be more delighted with it. . . .

What shall I say about the Berghaus? When I first saw the large dark book peeping through from the bottom of the box, strangely enough in the flash of the moment I made a good guess! While I was busily removing the obstacles which covered it, my first thought appeared to me to be far too rash, and I felt almost ashamed to repeat such an immodest and yet so heartily felt an old wish, and then I thought it would be *Renard the Fox*, by Kaulbach, or something like it. Yet how shall I describe to you my astonishment and delight when I saw realized that for which I had scarcely ventured to hope? It would be superfluous for me to describe to you my unbounded joy and my fervent thanks for it. You know yourselves, my best of parents, how much the possession of this classical work has

always been, and still is, a real longing of my life. Only one thing I will confess to you, namely, that, particularly of late, since the sad and yet necessary thought of changing my profession had increased, and the study of mathematics, but especially that of physics, as well as the future career of a teacher, were waving before my eyes like pictures, Berghaus' Physical Atlas has been one of the most important focal points in which my next wishes in regard to the future were concentrated and to which I always returned. Or, have I perhaps expressed this dear old wish of mine in one of my recent letters? As far as I can remember, I have only nourished it in secret, because, in my state of depression, I ventured to think as little of the fulfillment of this wish as of that of my other aspirations. Even when I awoke this morning, I had to recall whether, after all, it was nothing but a beautiful dream, and when I had convinced myself of the actual presence of the beloved book I plunged into it again with renewed delight. Yet I try in vain to describe to you the joy and the hope which I connect with the use of this master-work, or the enjoyment it will afford me. You will feel this better yourselves, my own parents, as you understand and recognize my little soul through and through. One thing I would still like to tell you, and that is that, especially for myself personally, I shall derive the greatest profit and enjoyment from it. There exists in me, so to say, a real sensuous

element, which permits me to conceive and to retain thoughts and facts, and to imprint them on my mind much more strongly when they are symbolized by pictures than when they are merely represented dryly and nakedly in words. I observe this, for instance, very clearly in anatomy, where, while in a few days I have forgotten things which I have painfully learned by heart, that which Kölliker, on the other hand, has put before us in a drawing, however hastily it has been done, is definitely fixed in my mind and I retain it there. Of what use in this connection the excellent physical atlas will be to me, and how it will really become for me "something to last me for the rest of my life" in the real sense of the words, you can scarcely believe. It will likewise be a great pleasure when I can go through the splendid geographical plates with you, dearest father, and when I can give you the physical explanations of them (this sounds much more presumptuous than it is intended to be!). That will, indeed, be a great pleasure when we can study it together, which I hope will be very soon!! For the moment I am very glad that the professors, contrary to all expectation and quite unhoped-for (for the first time this year!), have converted next week into one of holiday. Then I shall have an opportunity of looking through the book thoroughly! Also accept my heartiest thanks for the other presents; the provender will be of excellent use to me and will again furnish me with supper for several weeks, but I

have already thoroughly enjoyed their excellent flavor (even just now with my two house companions, the v. Franques from Wiesbaden), especially as I had to observe Thursday as (the day before yesterday) a day of fasting. That is to say, I intend to practice fasting from time to time, just for fun, partly in preparation for my future career as a teacher in a classical and modern secondary school, and partly, but not probably (!), in view of my travels in the future. (N. B. the latter thought often crosses my mind again now, especially when I am engrossed in my Berghaus!) Weber has already made great strides in such hunger exercises; now he fasts regularly for 36 hours and more, and this for mere pleasure, even when he has sufficient to eat in his cupboard and there is no necessity for it. By the way, so far I have only tried my hand at hungering for no more than 24 hours, by not having taken either a bite of food or a drop of anything to drink (not even water!) from Thursday morning (after my morning coffee) till Friday at the same hour, whereby I was in the very best of health, felt myself braced up for mental activity, and experienced no consequences beyond a somewhat more healthy appetite on the following day. . . .

The memento of grandfather is naturally another very precious thing to me; the hair of his dear head I regard as a particularly valuable souvenir; regarding the gold, you know my opinion about it; it has always something connected with it that

causes me anxiety. In order, however, to show my obedience and not to allow the precious present to lie idle, I have already worn it yesterday evening and this morning, and fastened the pin in the front of my neckerchief, which fact was immediately noticed by my acquaintances. But always from time to time I squinted down nervously in order to see whether it was still sitting there. . . .

This morning I heard a very good sermon by an elderly parson, who in his exterior, as well as in his diction, reminded me a great deal of our uncle Bleek. He represented Christmas to us as a day of miracle, of honor and of grace. It has rather pleased me, and was very simple and impressive. There is said to have been a great deal of hubbub last night in the Catholic churches, with music, processions, etc. After church I went for a walk in the Hofgarten, which is a larger edition of a Merseburg castle garden, and which stretches along the ramparts. The air was so mild (for several days we have had quite a warm southwest breeze here; no trace of snow yet), the trees have already begun to sprout well (even the Gagea trail out from the earth with their thin sap-green cotyledon, already for a length of three-quarters of a foot), so that I really felt quite at home and in my innermost fancied that spring had really made its appearance once again. Then I thanked God very fervently that he has bestowed on me such excellent parents and relations, and I have again taken full confidence in the feeling

that he will still do well for me. In many respects I begin, after all, in spite of all the hardships, to realize the use of my separation from you. One is much more intensely and more frequently directed toward one's own self—and thereby to God. By this means Faith grows involuntarily and overcomes the faint-heartedness which would lead to despair. The sermon to-day also pointed out beautifully how one can attain inward peace by true belief in the Word which was made flesh.

Unfortunately, as a general rule, I shall not be able any longer to listen to the sermons on Sunday, because just at that time there is a demonstration of the cryptogams in the Botanical Gardens, for which no other hour was to be found. . . .

13. WÜRZBURG, *11. 1. 1853.*
Tuesday morning.

. . . Yesterday a week ago, on Monday the 3d, there was the celebration of the foundation of the University, which was founded in the year 1582 by the founder of the Julius Hospital, Bishop Julius Echter von Mespelbrunn. The results of the prize tasks of the last year were made known. Neither the theological nor the law had been attempted at all; the only composition which was crowned with a prize was the medical one: "Concerning the Study of Thrush in the Human Body." Then the old rector, Doctor Hoffmann, professor of philosophy, made a speech about the "Importance of the Facul-

ties for the Development of Science," which pleased me very much and which you will also receive. He chiefly contemplated the connection existing between philosophy and theology, and proved that a system of theism based upon a profound Christianism, as in the most recent time has been attempted with much success but little recognition by Franz Bader (N. B. I had never heard the name before!), could alone be the means of real salvation for philosophy and for mankind itself, and, further, it is also the only right and true thing. From the beginning to the end he specially proves the inconsequence and futility of Spinozism, although one cannot fail to render honor to the founder of this school. Hegel and Fichte, as well as Schelling, even Kant, are also not to be contemplated as being absolutely consequent and unprejudiced. What yet struck me most forcibly in the dissertation, which for the greater part seems quite right and good, is that he places Schleiermacher in the same category as the above-mentioned pantheists, and attributes to him an idealistic pantheism (!), while at the same time he admits that the great and important ones among his pupils have not remained steadfast on the ground of pantheism, as Schelling himself, among the others, has elevated himself to theism, and the same, more or less, can be said of all their pupils in modern times. The main tendency is, as already mentioned, the refutation of pantheism. . . .

With what you write to me about the value and

importance of the omnipotence and the great influence which Christianity has on our modern high degree of civilization, and to the attainment of which it has contributed, I am in complete agreement. On Sunday night I also read in Hiecke's reading book for higher school classes, a very excellent composition in which the same subject is referred to. (This collection of Hiecke's contains altogether a real treasury of the most excellent compositions, which will also interest you very much and which you must still read. According to my opinion they are too deep for such schools!).

With regard to my medical studies I am daily more firmly convinced of their impracticability; in order to subject myself once more to a test, to-day I attended the surgical clinic in the hospital, where a cancerous swelling under the shoulder was operated upon, and I have had enough of it, not only for this term, but for the remainder of my life; that, by the way, it is not mere hypochondria with me that keeps me away from it you may see from the fact that during the first days of my stay here typhoid fever was rampant in the hospital, and that I have not become ill, although the very man whose arm I dissected had died of typhoid. Anatomy in itself is, as I have already said, wonderful, but only no pathology, no stories of disease! . . .

Yesterday afternoon I listened to Scherer in *materia medica;* on the whole, it is but very slightly

to be distinguished from organic chemistry, and in particular from anthropochemistry. His lectures are very attractive; Scherer is, as also are Virchow and Kölliker, with whom he forms the renowned trinity of Würzburg, still very young. All three are only at the beginning of the thirties. And what shall I have done at that age? Probably nothing?

However, till then there is plenty of time, and perhaps, after all, something may yet come out of your faithful old boy

ERNST HAECKEL, stud. phil.

14. WÜRZBURG, *31. 1. 1853.*

DEAREST PARENTS,

. . . This week I have made another discovery that can prove to be a fertile one. I heard quite by accident that there is a "Musical Institute of a superior kind" here that gives public concerts every Wednesday and Saturday throughout the year, from 4 till 6 o'clock, at which the classical symphonies of Beethoven, Mozart and Haydn, and occasionally something from Mendelssohn, are exclusively produced. The specially appointed director is a university professor, called Fröhlich. Naturally I went there immediately and it pleased me very much (that is to say, as far as music can please me at all!). The very large hall was crowded with fellow students. I shall go there again from time to time.

Now I have still to tell you the chief story, namely that about the grand and solemn torchlight procession which we arranged for Wednesday, the 12th of January, in honor of the renowned Virchow. The reason for it was partly in recognition of his excellent scientific attainments in general, partly in thankfulness that he had not accepted an honorable call to Zürich (which would have brought him many material advantages). (N. B. in consequence of this, he had made an application for an increase of his salary by the amount of 400 fl., but he only received from the Royal Bavarian Government—200 fl.! So you can see that people here can be still more mean than with us; the same fate was also shared by the rector, who likewise received only one-half of the increase of salary he had demanded!). Of course, several large meetings had been called previously by the students, at which the affair had been discussed and arranged, where matters had proceeded in a lively manner, and where, naturally, many mad proposals had been made. By the way, only 150 took part in the torchlight procession; most of the others were disinclined to sacrifice so much money. (It cost each one 1½fl.) We had two large bands; one belonging to the fortress artillery, costing 40 fl., the other belonging to the Landwehr (that is to say, what is so called here; it would be better to call them the national guard or civil guard, or "the Philistine Guards"; these brave warriors may best be compared to the Merse-

burg rifle club) costing 44 fl. 24 kr. (general laughter!). The procession was a grand success. The conditions were very favorable; the night was pitch-dark and a fresh breeze caused the flames to flare splendidly. And what part do you believe your "pedantic, stay-at-home plant-man," as my official title is here, played in it? I will tell you: *a leading part!* (hear, hear!), and that on account of a single intelligent inspiration which was lauded by my fellow-students as exceedingly witty and classical. I pulled my shiny *calico dissecting overall* over Karl's old coat! As I was rather afraid all the time of catching a cold, particularly as my teeth began again to trouble me a little, I pulled father's old inexpressibles over my thick check trousers; but as the former were much the shorter the others came down a good way below them. Now still imagine the big old cap, the light-gray clumsy galoshes over my black boots, fur gloves, a gigantic torch in my left hand, a knobbed stick in my right, and there stands before you in the red glare of the torches the highly successful, really poetical picture in romantic classical garb. There is yet to be mentioned the layer of soot which began to appear from the first moment after the torches were lit, and which entered into intimate union, just like printer's ink, with the perspiration on my face, so that, in reality, I presented the appearance of a charcoal-burner or a devil incarnate, or something of the same kind.

The effect of this successful representation is scarcely to be described. The children fled in terror, the women and maidens actually formed circles of giggling and astounded spectators wherever we stopped, notwithstanding that we pushed our torches as near as possible into their faces; the men regarded me rather dubiously, and my fellow-students themselves admired in me the "true disciple of science," the "anatomist as he should be," and all this effect was produced by the beautiful dissecting overall, the monotonous black of which was aggreably interrupted by brown bloodstains, small particles of fat, etc. It was natural that the soul inclosed in such a charming exterior felt itself uplifted accordingly; I waved my torch, and when, after nearly two hours of perambulating (from 8 till 9.45 o'clock), we arrived at the Cathedral square, we threw the remains of our torches in a heap and performed a wild witches' dance around the bonfire, my anatomical figure playing a leading part therein. This last moment, moreover, was among the finest of all. At first a huge ring was formed and "*gaudeamus ignitur*" was sung, and then all at once the whole of the 150 torches were flung high in the air and described wonderful parabolas like rockets, after which they fell to earth in a wide curve. Some specially skillful ones hurled theirs a few times more into the air with such a swing that in their flight the torches spun round several times on their own axes, which produced a marvellous effect. . . .

We stood in front of Virchow's house for nearly an hour. A deputation, which drove in a special carriage, was sent to Virchow in order to express to him our sympathies (which with us are not what you would call very great, although, personally, I very much admire his cold, firm, very strong character); then he came out himself and made rather a long speech, full of noble self-possession and zeal for science, to which he belonged with heart and soul! I would have preferred to have this torch-light procession in honor of Kölliker! When I reached home, full of exuberance and merriment, my good landlady received me immediately with "Jesus, Mary, Joseph, what a sight you are! (*Jesses, Maria, Juseph, wie schahe sa ausch*) Herr Doctor!" Indeed, I looked quite a sweet pet, especially about my face, where a little piece of my skin *en profil* slightly magnified would have looked something like the following: the entire skin was covered with a thick beard of black fibrils and soot, like a magnet that had been lying among iron filings, so that I could scarcely recognize myself. However, with warm water, butter and brimstone soap, we soon succeeded through our united endeavors to remove this coating as far as two black rings round my eyes, which still remained for a few days. As a matter of fact, the whole affair had an excellent effect on me, the toothache was almost driven away by it and my dissecting overall possesses, even now, a powerful odor of pine-wood soot, which,

mingled with the exquisite smell of flesh in the dissecting room, does me much good, and always reminds me of our beautiful pine-woods in the Mark Brandenburg. . . .

At 11 o'clock I still went for an hour to a great jollification where nearly the whole of the medical students were assembled (for here also the non-torch-bearers were not absent), and where all the medical docents, Virchow himself at the head of them, entered with me. In the beginning it was all right; there was much merriment and much music-making, and student songs were sung. But after a little while the whole tone began to become rather too boisterous and wild, and even among the professors some confusion of ideas commenced to be observable. Kölliker, who is always the most prudent one, crept away on this account after a short hour, and I followed his example. But the others remained together till the next morning, when at last the whole jumble dissolved into a general state of being sorry for themselves. Virchow himself reached home after 3 o'clock; how? probably he himself knows least of all about it! The consequence was, that on the next day no lectures were given by anyone except Kölliker, and there were only 25 present at it. Virchow stayed at home for a week, suffering from an attack of "Grippe." That is the end of the song! . . .

1,000 greetings. E. H.

15. WÜRZBURG, *21. 1. 1853.*

At last, at last your dear letter arrived this morning. Many thanks for it. But the cause of the delay, namely that our dearest Aunt Berta is so ill, has made me very, very sad. In such cases one would like to ask God how he can allow the best soul to suffer so innocently. Yes, there are many riddles the solution of which is beyond our reach. With regard to your religious ideas, I am otherwise quite in accord with you, dear father; only many a thing is not yet so clear to me. . . .

Now good-by. Still many hearty thanks for your two dear letters, and continue to love your old boy

E. H.

16. WÜRZBURG, *30. 1. 1853.*

DEAR PARENTS,

Your remittance, which I received yesterday, came to me as surprisingly and unexpectedly as, in reality, it is unnecessary. The fact that I have actually cost you in the first month of my abode here nearly 100 talers has given me such a shock that I have made up my mind to cost you only 50 during the remaining three. I have spoken to a few comrades who have assured me that they can manage quite comfortable each term on 150 talers, and I do not see why I should be more favored than others, especially when I think of my friends in Halle, who do not even require as much as 50 talers. For this purpose I have now undertaken and am

carrying through certain economies in my budget! At the utmost, I only go out in the evening once a week, and eat bread at home for 2 kreuzer, and with it the delicious plum jam and the excellent sausage which you, dear mother, sent me for Christmas. Although I have lived on the two latter victuals every evening since the new year began, they are only consumed to the extent of three-quarters. For dinner, too, I no longer eat for 21 kr., but for 15 kr. This noble dinner-table always reminds me of the one papa and grandpapa used to refer to when speaking of their student days at Halle; probably in many ways it even beats it. The best thing there is that one gets a good big helping of soup, which you have recommended to me for special consideration and which is fairly good; to compensate for it, the beef from which it has been boiled is all the drier—a real bunch of fibers! My pen is too weak to describe the delight of the roast joint on Sundays. I will merely mention one thing, namely, that it always consists of a piece of the "ribs of a hare," which opalesces in all the possible tints of the rainbow, and in which, even with one of Schenk's microscopes, one could not detect a diminutive atom of fat. The sole vegetable always consists of rather sour cabbage (N. B. in which medicos continually pretend to recognize the odor peculiar to hippuric acid!), which is particularly agreeable after having listened for a couple of hours to Kölliker on the study of the bowels, and after having been dissect-

ing. Anyhow, I must admit the true merits of this excellent table and duly appreciate them, for, above all else, it has converted your spoiled sweet-tooth into an "all-round eater" (always excluding, however, sour kidney and buttermilk soup!), of which you will be glad, and which establishes the truth of the proverb "Hunger is the best sauce." But, secondly, it helps to increase my longing for Easter. Every time that a particularly sour morsel is swallowed with repugnance, I think: "Just be patient, dear stomach, and you will find how excellent dear mama's cooking will taste to you at Easter!" and then I take a plunge into this Utopia of the future, and I gobble down my helping in the twinkling of an eye, without noticing how strenuously my digestive system may be struggling against it. And, lastly, these delights of the table are still increased by a students' corps "Rhenania" dining in the same hall, and who drown all unpleasant impressions by their boisterous shouting, rollicking, howling, singing, etc., which could not be equaled anywhere else. We other students ("Kamels"), who are sitting near by at the "outsiders'" table, are completely ignored and are subjected to the infliction of their disdain, which is quite satisfactory to us. For the rest, they cause us much amusement by their whimsical and grotesque freaks. Among other things, they have trained the entire poultry yard belonging to the landlord, so that during the meal the fowls come over the roof and enter at the windows to

obtain their share, which produces the most delightful scenes.

After all, I really feel that this meager meal agrees with me very well and that, as a matter of fact and greatly to my advantage, I am not at all spoiled. In addition I have introduced some other little economies (for instance, I have not drunk a drop of wine since Christmas, etc.), so that I really hope to manage on the 50 talers you have already sent me; in any case, I would still have been in need of money for the journey at Easter, and the present amount can be applied to that purpose. Therefore, the best and heartiest thanks for it! . . .

To you, dear father, I must still render my special thanks for your account about Sydow's Union lectures. On the whole, I am quite in agreement with these opinions; nevertheless, I have sketched for myself a picture of the personality of Christ which, in a certain way, is still more divine, by imagining him rather as of the essence of God clad in a mortal frame, whereby he becomes more accessible to us. I believe, however, that this is still a riddle that can only be solved by us beyond this world, consequently I attach no great importance to the slight distinctions and differences that are to be found among true Christians regarding the opinions concerning the personality of Christ; after all, scarcely two people have quite the same conception of this question; it will always adapt itself

and become modified according to the ideas of the particular individual. . . .

A thousand thanks and greetings from your old

ERNST H.

17. WÜRZBURG, *8. 2. 1853.*
Shrove Tuesday.

DEAR PARENTS,

. . . For eight days such a mad turmoil has been reigning here that one (*i.e.*, the other people) is quite bewildered. With us in Northern Germany one has really no idea what such a beautiful time of carnival as Shrovetide may mean. Ever since Christmas there has been a ball here at least every third day, and especially during the last weeks most of my fellow-students were literally attending balls or drinking-bouts almost every day, so that lately they really began to grumble and said: "Such hardships can bring even the strongest hero down to the dogs." On Tuesday in every week there has been a great soirée at the President's, on Wednesdays at the theater, on Thursdays somewhere else, on Saturdays at the Harmony, etc., etc. But the culminating point of all these events is reached by the socalled "population balls," which are known under this extremely ambiguous title in the lowest as well as in the highest circles, and which, unfortunately, they deserve with only too much justice. They are masquerade balls which take place in the largest halls in the town and the male contingent

of which is comprised, for the greater part, in addition to some counter-jumpers and young lawyers, etc., of the students (over 400), but concerning the female contribution nothing more can be said but that the most noble among them are cooks, servant girls, etc. How mad the "goings-on" there must be I could see from the fact that my cautious landlady, with her truly motherly anxiety and solicitude, warned me and begged me not to go there on any account. Naturally, I am not affected at all by these happenings, any more than by all the other soirées and balls, carousals, mummeries, etc., which are now the order of the day. I have, however, greatly amused myself to-day over a fancy-dress show, which has been arranged and thought out in a really remarkable way by a students' corps, the "Bavaria." These handsome, strongly built fellows, all of whom are well known by sight in the entire town, looked extremely ludicrous and comical in their disguises. The advance guard was composed of several of them, dressed as fools or clowns, who hit the people with their fans and fool's caps, to the general merriment of those who thronged the streets nearly to suffocation, and thus made way for the procession itself. The latter consisted first of all of four musicians, in the most costly apparel, two of whom, garbed as guitar girls, played a most graceful part, and performed truly heart-breaking and ear-splitting caterwauling music. They were followed by one disguised as a boot-fag and

who gallantly flourished his polishing-brush in the faces of the people, and after him came the hero of the procession, Don Quixote, literally made-up according to Cervantes, seated on Rosinante, which was perfectly matchless, followed by Sancho Panza, also faithfully counterfeited, seated astride an ass, and, last of all, Dulcinea riding on a gray palfrey. This delicate spinster was represented by the strongest and most robust fellow in the entire corps, whose face showed the crisscross scars of gashes of all descriptions, and whose 6½ ft. long carcass reached down to the ground. Then followed several notabilities of the town, among whom the chief of the university police, who had recently been removed on account of the story about the officers, was conspicuous; all of these characters were imitated with exact fidelity to nature. Then came the second act: showing how Don Quixote is wounded, and is transported home by two maidens of his village; also this same Don Quixote, excellently portrayed lying in bed with a baby's "comforter" in his mouth, drawn in a car by two rough fellows dressed up in the ordinary comical national dress of the peasant girls. And now there followed a number of other no less delightful and highly comical groups, among which the god of beer, accompanied by the beer queen and a tippler riding on a huge barrel, made a very good show. The barrel was drawn by two old mokes, but it was continually tapped and the beer either immediately

swilled or poured over the heads of the people. The end of the procession was brought up by another car which carried a costly, really marvelously dressed-up and ridiculous family of male and female English travelers; on the box seat squatted the real boot-fag of the "Bavaria," representing, with marvelous fidelity to nature, a baboon, and behind him a perfectly black devil with a long tail, armed with a pitchfork, with which implement he merrily poked the crowd that followed and thus brought the procession to a close. With what enthusiasm and really exuberant shouts of joy the entire procession was accompanied by the whole of the population is scarcely to be described. Here could be seen once more the lively South German national character, which bears so many traces of the influence of the South. The sound of the shouting and the noise is penetrating even now to my quiet hermitage; it seems to be endless, and probably will not end throughout the night. But, to make up for it, to-morrow will be Ash Wednesday, when, as my pious landlady tells me, all the people will go to church in order to prove their devotion thereby, with ashes sprinkled on their heads, and will allow the clergyman to scandalize and illtreat them in every possible way! This is certainly a wonderful kind of piety that is practiced here! It consists chiefly in bells being rung for five minutes nearly every quarter of an hour, so that often the clanging causes one to feel quite stunned and to think that

the people have nothing better to do than to toll bells. But this is the kind of piety that exactly pleases the priests, and they try to promote it by all imaginable means. One of their papers, the *Münchener Volksbote*, sometimes fell into my hands here; it is a real organ of the hierarchy of Bavaria, in which everything is distorted in a Jesuitical fashion and by which black is made white, and white black, so that I get quite annoyed and would often like to tear the paper up. For instance, a little while ago the following appeared in it: "It was a real, godly joy for every Christian to observe how even the Prussian Royal House is being converted more and more from the heretical to the only true religion; which can already be seen from the fact that the entire surroundings of the Prince and Princess of Prussia, as well as the future King himself in Coblenz, are ardent auditors and warm admirers of the Jesuits!!!" As though one could not listen to this devil's brood without being their adherent and disciple!! By such means everything is distorted, and the point of it all is, that in every possible way the people are constantly being excited to warlike feelings and hatred against the North German heretics (Protestant and Radical Rationalist is all the same to them!). The worst thing of all is that this black rag has secured for itself a very widespread authority and adherence through the peculiarly popular handling of its tone and its facts. By the way, the "holy *patres et fratres* of

Jesus" are reported to have the intention to haunt around there also; naturally, with similar success as in this place! . . .

Schenk, who is himself a Catholic, but one who is extremely disgusted with the nonsense and the villainy of the Catholic clergy, and who, as though driven by necessity, is a Rationalist (which he surely would not be if he were a Protestant), has coined quite an excellent expression for their activities, and besides it is altogether really very amusing to hear him grumbling about the clergy here. (Thus, for instance, he often asks me: "Now, Herr Haeckel, you who have come from godless, heretical North Germany, have you not yet learned true piety here?!") While I was with him last Wednesday morning there passed by a great procession with torches (it was the Feast of the Purification of the Virgin Mary); in the middle of it was the bishop, or whatever he might have been, a fat, bloated, well-fed priest, vestured in gold and silver, over whom four choir boys carried a large velvet baldachin. When I heard the ringing and the singing afar off I asked him what was the cause of it, whereupon Schenk replied quite dryly: "Ah, here comes a great Bonze again!" (Quite a wonderfully chosen and marvelously significant expression!)

I have had two very happy botanical days this week, on Wednesday and Sunday, when from 9 o'clock in the morning till 9 o'clock in the evening I have lived in nothing but plants. That is to say,

with Steudner I have helped Schenk to sort out and pack the duplicates of his herbarium (particularly very beautiful monocotyledon plants from his last Wallachia-Transylvania journey), during which occupation many a choice titbit has fallen to our share. Here the flora is very beautiful in itself; and what will happen in the summer, when I cannot run about?! . . .

Schenk is now always telling me in his lecture much about the Montenegrins, in whom he is very much interested, because he has traveled through their little country. They are a very strong, hardy, mountaineering people of Greek religion. He believes that their history may be the cause of a general European war, and that the very much hated, despicable Turks would meet their ruin in it. I have also seen in Berghaus that the number of the Turkish colonies in Turkey and Greece is exceedingly small, and that, in reality, they are restricted merely to the larger military stations. If Austria so desired it (at least so Schenk thinks), in one day the whole of Wallachia and Moldavia, and in one week the whole of Turkey, would fall into her hands—assuming that Russia (who supports Montenegro) would give her consent, and that France would not offer her support to the Turks. The latter, which is now supposed to be happening, is one of those very interesting occurrences that have repeated themselves in history. One need only think of Francis I of France, who backed up the Turks against Charles V. . . .

WÜRZBURG, *17. 2. 1853.*

DEAREST BELOVED PARENTS,

First of all accept my most heartfelt and best thanks for all your love, which is always a support and encouragement to me on my way through life, and with which yesterday you made me a special joy. The proof of your maternal thoughtfulness, dearest mother, is all the stronger because I had absolutely expected nothing, and received quite a shock when the parcel arrived. I found it yesterday morning when I hastened home between two lectures in the certain hope of finding letters from you. The replenishment of my larder is now of the greatest service to me, particularly as my store had dwindled down to the last crumb and consisted of no more than a tiny scrap of the Christmas sausage 3 c.m. in length. The lovely plum jam and the last scrap of the honey cakes left over from Christmas were finished on the day before yesterday, after they had done excellent service. . . .

As a matter of fact, I have spent my birthday alone, just as quietly as every other day; none of my acquaintances knew anything about it, otherwise I would probably have had to celebrate it in beer. My good landlady, who had been racking her brain yesterday to discover what was the matter when she saw the arrangements I was making (that is to say, I had tidied up my room very carefully, had donned my best coat—which otherwise I only wear on Sundays—had tried on my gray hat, etc.—

only guessed this morning, when I showed her the splendid presents I had received, that it must have been my birthday. She was almost indignant that I had not told her, and said she must now celebrate it as a belated festival; if only she had known she would have cooked "ground-pears (potatoes) in their jackets," which she knows to be a favorite dish of mine. She is really a good soul, and looks after me like a mother. . . .

I received a very cordial letter this morning from Finsterbusch, and this afternoon came others from Weber, Weiss, and Hetzer. Weiss writes to me only quite shortly; he is very sad about the death of his uncle. What you, dear father, write to me about the life and character of the latter, is absolutely correct. I find all these traits in miniature in his nephew, my friend. Also in him, under a stiff and often repulsive exterior, a very good and dear heart is lying, and just as strictly moral a character is hidden. It is really as though this were hereditary in the family. Weber is still hoping to accompany me to Jena in the summer. I must confess, however, that I am no longer so blindly enthusiastic about Herr Schleiden as I was formerly, although he is a capable genius and quite unique in his way; for he is, after all, terribly prejudiced, dogmatic and, worst of all, very negative. On the other hand, under certain conditions, I would not be so very much disinclined to kill the summer here, and to go through the classical, microscopical courses

here with Kölliker, particularly if, which is very easily possible, I should become assistant to Schenk, for he will probably offer this to me in the near future. But I shall not accept it on account of my foot. . . .

There is nothing very new happening here, except that on a daily average half a dozen duels, which generally terminate somewhat bloodlessly, take place. These combats usually proceed from the different corps; the worst of it is, they take up much valuable time and money, and result in nothing but disfigured faces. Last week, shortly after one another, two of my acquaintances, very nice fellows, fought a duel with one and the same insolent Jew boy from Frankfort-on-the-Main, a disgusting, insolent man, and slashed his Jewish face about handsomely, without receiving even a scratch in return. By the way, the Jew has already issued another challenge. To a great extent, this noble zeal for dueling might be merely a counterblast to the immense, really terrible, piety which is so apparent here everywhere and floods the streets. Since last Sunday a "Mission of the Holy Fathers" is preaching here; it consists of six men *societatis Jesu*, among whom also is the future General of the Jesuits, a most eloquent, sly, and learned fox, who preaches in seven languages. The thronging of the crowds to hear these Jesuit sermons is so immense that the two largest of the innumerable churches in the town in which they preach are, literally, not empty all

day long, while the other churches are completely deserted. Even for hours before the sermon begins, the vast Cathedral is so crowded, that people are still left standing out in the street. From the countryside the individual communities are formally and expressly commanded in episcopal letters to come, and, *nolens volens*, must hear at least three sermons. The entire nest is then so overcrowded that a continual humming and buzzing of the uncountable congregations, who have come from many miles around, fill and animate the streets all day long. Best of all are the really remarkable and most peculiar and comical national costumes of the different districts and surrounding country which are to be seen everywhere. The peasant women, their costumes reminding one of the Altenburg women, are specially distinguished for an extraordinary lack of taste and a variety of glaring colors in their finery, with which they are overloaded and in which they flaunt about. Red and yellow, in the most awful combinations, are predominant. The Jesuits are preaching at least six times a day, and throughout the day many people do not leave the church at all. They also preach special class sermons: for instance, for children, for scholars, for handicraftsmen, married people; soon there will be one for the students, concerning which I am filled with expectation. I immediately seized the very first opportunity, and on Sunday evening I heard the third one which they preached. The preacher

was a handsome young man, who spoke with much eloquence, fire, and emphasis; I was especially interested in the peculiar logic that formed the scaffolding for the whole sermon. At first he declared that thing to be "good" which fulfills its purpose. Man is ordained by God to be good, and in that direction the mission desires to work, in order to lead men to this their destination. Then he began to talk about God, endeavored to prove his existence and his substance, and quoted his grace and kindness in contradiction to our sinfulness, which caused him toward the end to become very fiery, and in the most violent terms he exhorted the people to repentance. Although one could not mistake a thorough and intellectual study of philosophy, and particularly of logic, in the whole treatment of his theme, yet there were not lacking numerous deviations and paralogisms. On the whole, I could say nothing in the least against the sermon, notwithstanding that I paid great attention and took all possible trouble to discover something offensive in it. The reason for that is, that it was one of the first, and they pursue the clever policy of beginning by preaching quite generally, plausible matter for everybody, and it is only gradually that they enter more profoundly and more in detail into their doctrine. By such means, as I have even now heard, they are supposed to introduce mischievous matter. Thus they attack natural science (and, naturally, all other enlightening subjects as well), and they are said,

in particular, always to have hell's flames near at hand. Thus one of them is reported yesterday to have represented hell as an eight-cornered pool, from every corner and end of which emerged hellish torments and demons, and all this was depicted in the minutest detail. Then he suddenly cried out that he knew, for a fact, that there were two among his male and female auditors who were among the most evil of the devils. Then a general sobbing and sighing was observed among the numerous wenches, because each had believed that she was the one indicated.

The psychiatric clinic promises itself the greatest advantage from the whole story, and as the holy fathers will go on working in this way for a fortnight and will go on making it more and more wicked the longer they continue, there is surely every prospect that the lunacy department of the hospital will considerably augment the number of its inhabitants.

The sermon which I heard was, in any case, over the heads of the common people, who at all events formed the bulk of those present (although all classes were very numerously represented); it was composed far too philosophically in manner and expression, it contained far too many incomprehensible foreign words, so that only half of it could have been understood. But it is exactly in this that the effect is partly produced, because the masses admire the sublime language which they do

not understand, and allow themselves to be carried away by rhetorical artifice and, above all, by the exceedingly lively, almost theatrical, action. Next Sunday mission crosses will be erected everywhere, and I am full of curiosity about this as well. As a matter of fact, in reality I was not in agreement with the main theses of that sermon, in which he tried mathematically to prove the existence of God, because in this I hold quite the same conviction as you, dear father, have expressed to me, namely, that this cannot be perceived with our restricted human understanding, but that faith is absolutely necessary for this. In this connection, I also heard a very beautiful sermon last Sunday by an eminent Protestant preacher. The text was: "The old things are passed away; behold, they are become new." So I have decided on my birthday to put on the new man more and more and to grow and increase in faith. The outward celebration of my birthday I have observed alone by myself in all quietness. It consisted in my eating my midday meal heartily and to my satisfaction, and with it I drank a stoup of wine (the first, and probably the last, this year, at least here). In the afternoon I made an excursion, or rather took a walk, in the most magnificent and clearest weather, with Schenk and Steudner; as yet the phanerogams are not in bloom and only here and there a tender moss bloom peeped from under the snow. When we had reached our goal, the Guttenberg Wald (the nearest to this

place!), which is about three-quarters of an hour away, I had to turn back alone, because it became too far for me and the climbing up the hill particularly fatigued me. Nevertheless, the walk agreed with me quite well, as well as with my knee after so much sitting in the rooms. In the evening I reveled once again in poetry and Berghaus, and once more read one of my favorite poems, "Hermann and Dorothea." Then late as it was I wrote to Aunt Berta and afterward I thanked God very fervently that he has given me such dear good parents, relations, and friends. . . .

Embracing you with the most fervent love,

Your old Ernst H.

19. WÜRZBURG, *27. 2. 1853.*
Sunday evening.

DEAREST PARENTS,

After I have, literally, scarcely risen from my chair throughout the whole of the day and have not even gone to dinner because I had to draw nearly a whole week's arrears in anatomy with Kölliker, it will be my Sunday pleasure this evening to chat a little with you, which is always my greatest happiness. But it will not be much, because my letter paper has come to an end and the letter would become too heavy on such thick paper. A week ago to-day I was with Professor Schenk; besides myself, there was only Steudner there. In the beginning we amused ourselves and

spoke only of plants and other *botanicis*, abused the Jesuits, etc. But gradually and unexpectedly, the conversation turned upon politics, and then I wished above everything else that you, dear papa, had been there, for you would have been proud of your boy. Really, never in my life would I have thought that such patriotic sentiments were slumbering in me! Schenk is as amiable and clever as, in regard to politics, he is completely stupid; he represents the absolutist and un-German policy of the Austrian Cabinet, and pretends to have arrived at this opinion through having traveled in the Austrian States. Naturally, the first thing that occurred was quite a terrific attack against Prussia, against her perfidious conduct toward Germany, as in *anno* 1805, so also now; then such phrases as for instance: "The Olmütz Treaty is the only wise and honorable act of Prussia; naturally also Manteufel, the only good Minister, of whom it is still to be hoped that he will do something for Germany! Prussia has always desired nothing more than to suppress Germany; she has coquetted with revolution; if it should ever be united, the first thing that would happen would be that Prussia would become an Austrian province, as had Hungary, Transylvania, and the other Slav States, all of which have to be received within the German Federation!! Austria has always followed far too lenient and mild, benevolent and open, a policy; she ought rather to have been far more energetic

and astute!—again: the Rhinelands had originally been Bavarian property and land-grabbing, unjust Prussia has, half by force, seized them!" (Schenk himself was born at Cleves when, as he pretends, it was still Bavarian, together with the Grand-Duchy of Berg, etc.), and other similar nonsense. Naturally, Steudner and I permitted nothing of all this to remain unanswered; we quarreled a great deal among ourselves, reproached Bavaria and Austria for all their sins, and, finally, I began to argue with as much heat and spleen as would have done all honor to my dear hyperpatriotic father. At last I went so far that I jumped up and shut my ears, and stamped a few times up and down the room, at which the good Frau Professor became quite alarmed and did her best to calm me; at length she interfered, forbade all further politics, and diverted the conversation into another channel, but where once more it almost came to another quarrel: the respective superiority of North and South Germany was discussed, and naturally in this, as you may well imagine, we did not abandon our Northern Fatherland. But afterward, in the end, we chatted quite amiably and merrily till nearly one o'clock. As I left, I told Schenk that I could now take comfort in the fact that the more clever the botanists, as well as all natural scientists, were in their own department, the more miserable politicians did they make, whereupon he laughed very much and tried to retort by applying the

phrase to myself. That, after all, he was not vexed at my North German rudeness, I can conclude by his having made me a present in a very friendly manner on the following day of some dear little mosses (duplicates from his herbarium), in order to appease my Prussian patriotic wrath, and wound up by saying: "But if I were in your place I would not accept the mosses—they come from wicked Bavaria!" Yesterday he also showed me some fine, really wonderful plants, which the botanist Preiss had collected in New Holland. All the specimens have a very peculiar character, which quite corresponds to that of the strange, desolate southern country. One seeks in vain for a fresh green; everything is gray-green or altogether gray and usually covered with long, shaggy hair, but the shape is quite peculiar and odd. The flowers are generally most intensely and quite magnificently colored; the character of the entire plant is extraordinarily compact, firm and dry (for instance, the very characteristic *proteacea*); they are generally plants which, although very grand in themselves, are not at all designed to embellish the landscape. Yes, if only I could botanize there some day! . . .

The great winding-up period of the lectures has commenced, so that everybody is hurrying with all possible speed, although it is impossible to overtake all that, in a proper apportionment of the time, ought to have been finished long ago. Kölliker

has doubled his lectures and proceeds so rapidy that one's fingers are cramped from taking down the notes; thus, for example, he has now gone through the whole of angiology in a fortnight, so that I am no longer able to keep pace in working up my notebook (which will really become a splendid illustrated production). But in spite of all this everything is intensely interesting.

To-day the Jesuits have preached here for the last time, to the accompaniment of such general sobbing, sighing, fainting, strewing of flowers, binding of wreaths, that they could scarcely hear their own voices. For hours in advance the great Cathedral was already quite crowded; the jostling is said to have been terrific. Yesterday evening I heard another sermon by a "mission father," and it happened to be about a very interesting point, namely, the worship of the Saints in the Catholic Church; as a matter of fact, it has scarcely reconciled me to it. The main argument was something like this: there are two kinds of worship, conditional and unconditional. The latter we offer to the king, the former we owe to his friends, relations and servants. It is the same with God, whom alone we should worship absolutely. In the same way, however, we must also relatively worship his best friends, who are the Saints, and, above all, the Mother of God, Mary, the perfect virgin, and yet the mother of us all.

A parallel was then drawn between Eve and

Mary (according to which the former is the example, the latter the perfected and realized ideal); and then followed an extended explanation of the Mary cult, as to how it must be practiced, how necessary and salutary it is, how it can perform all things by its intercession with God, and how she alone accompanies, protects us in all our ways and through all our lives, leads us to repentance and amendment, etc.

A leading factor consisted in a series of touching pictures; the suffering of Mary, for instance, was depicted as her holding in her arms her only Son, Christ, murdered and yet guiltless, then her purity, her immaculateness, etc., whereby many were actually affected to tears. I must confess that I can reconcile myself to the Mary cult and the worship of the Saints even less than before. And then a very unpleasant impression was produced by the simultaneous chattering of several thousand voices, which was actually in full swing when I entered the church; it continued without expression, like the measured rolling of drums, and exemplified senseless lip-service in its naked form. Really it reminded one in a striking manner of a Jewish school, or even of a ragged school where the children are first taught how to spell. . . .

Now, dreaming or waking, my chief thought is our approaching reunion, most heartily longing for which is your old faithful boy

ERNST H.

20. WÜRZBURG, *10. 3. 1853.*

DEAREST PARENTS,

In reality man is nothing but "a two-legged, plucked cock" (as Plato says: at least, I think it was he), who in all he does and thinks is dependent upon the weather. In any case, it is so with me. Since my birthday, winter has come upon us; we have had cold, snow a yard deep, etc., as you have had in Berlin. During this time, I have been grinding like mad, I have been sitting and sitting and grinding, so that at last I have begun to wonder how I could stand it, and I thought that I would become quite silly. It has been thawing for the last three days, and to-day is as warm and sunny a spring day as ever could be desired. All the snow has melted to water, but at the same time so, also, has all patience, all perseverance, all work and whatever else such praiseworthy virtues might be called. The old mercury is once more coursing through all my veins, so that, in spite of all my efforts, I can scarcely command enough leisure and thought to allow me, even half reasonably, to write to you. The latter is hardly necessary any more, because in the nearest future the ardently longed for and feverishly hoped for moment will arrive when I can enfold you, my beloved parents, in my arms. Perhaps I may be right when I attribute my gigantic instability, restlessness, etc., solely and alone to the terrible impatience with which I am hoping for the reunion and picture it to myself. When I ask my-

self why I have suddenly become so "petulant," it is, after all, nothing but the old love and longing for the parental home, and the love of wandering about (or if, alas, it cannot be the love of wandering, at least the love of traveling) that thrills through my being and spoils my pleasure all the time I am sitting at home or in the lecture-room. The worst of it is, that Kölliker will lecture not only this week, but probably the whole of the next, and I am obliged to wait patiently till he deigns to stop. All the others have closed their doors; in addition to the chapter that K. is now going through, the topographical description of the peripheric expansion of the nerves is terribly difficult and, at the same time, tedious, and he goes ahead with such fearful rapidity that one (at least I) can scarcely think and sketch (to say nothing of taking notes). Therefore no one ought to be astonished, and I would not like to deny the impossibility of the idea if one good morning Ernst Haeckel would get up and say good-by to beautiful Würzburg (perhaps forever), as likewise to everything connected with medicine. Now you must not be surprised, dear mummy, if at the end of next week a long, dried-up (perhaps famished!) lath, with shaggy, fair and almost yellow-brown hair, and a beard of the same (a mustache as well as a beard, the latter, however, only three or four lines long) and with a long pipe in his mouth (the smoking had to come sooner or later, particularly as you wanted *partout* to turn me into

a medical man!) enters your house and pretends to be your boy; only do not be shocked! In the course of time you will soon recognize him, at least by his philanthropic, decent behavior, which has always remained as it was (as altogether has the whole boy, who, with the exception of the new beard and the tobacco pipe, is still the old one!). And you, dear papa, will have to give up my big ancestral room (in case, that is to say, you have been inhabiting it), for a beautiful haycock of one foot in diameter is coming with me and will become a pleasant addition to my lonely barn. There the great table will be loaded up again with plants, and the rioting in the hay will go on to my great delight! . . .

Now I must close, because my little piece of letter paper (which I still turned out accidentally from a corner) is coming to an end, as well as my oil, my butter, my sealing wax, my anatomical notebook, but, above all, my patience! A very, very happy and joyous meeting. Embracing you for the last time in words your old

ERNST.

21. WÜRZBURG, *25. 4. 1853.*

DEAREST PARENTS,

I am employing the evening of grandfather's birthday, when you will be sitting together very cozily and merrily with the great head of our family, and when you may sometimes, perhaps, be thinking of me, to announce to you my happy arrival here

and to tell you something about my journey. I spent the night on the way at Halle by sleeping splendidly as far as Cöthen, quite alone in the compartment for "nonsmokers." I arrived at Halle at three o'clock and then hunted Weber, Hetzer and Weiss, who had come over the previous day from Merseburg, out of their beds. During the course of the morning, I made a longer excursion to Giebichenstein, Kröllwitz, etc., with the latter. But everything was still so extraordinarily backward, that even on the Ochsenberg we scarcely found any flourishing examples of the *Gagea saxatilis*, which is supposed to be in bloom at the beginning of March. Instead, we were fortunate in finding a few nice mosses, *Guembelia ovata* and *Polytrichum piliferum*, the latter colored a very beautiful red and with many male flowers which I have never seen before. In other respects, we walked the whole time in the most terrible storm and rain. At midday we ate in a students' inn, where I met several friends from Merseburg. . . .

Then I went to Schlechtendal, who did not exactly satisfy me, particularly when I led the conversation to the subject of my profession. He advised me rather to give up botany (for which I might have the will, but not the strength); later on I heard, however, from Henkel that he is altogether very selfish toward younger people, that he does not support them, and tries to divert them from botany. I paid no attention to this. On Thursday, the 21st,

in the evening, I went with Weiss and Weber to Merseburg. . . .

On Friday morning, Weiss and I experimented with Bertheau's new microscope, which is quite excellent and which has reawakened in me the longing for my new one. . . .

Then I went to Lüben, who received me in a very friendly manner, and with whom I remained for over four hours, during which time, mutually and thoroughly, we poured out our natural-historic and particularly our botanic hearts to one another. We had to exchange the events of a whole year! He was of the opinion, as also were all other friends with whom I spoke (especially Weiss, who is absolutely sure of it, Osterwald, etc.), that in reality I am not fit for anything but to be a Professor *Botanices*, and for nothing less than that!—Oh! Oh! Oh!—*O scientia amabilis; quando tandem tecum in æternum conjugas?!!!* Now all this has put such strange ideas into my head, that up till now I have been very cheerful and jolly! . . .

The following morning I went to see Christel and her husband. They seem to live very happily and cheerfully; their little Emma is a fat-cheeked, bright child. Then I was with Friedrich, who is now also a blissful, tender father of a family. His little boy, a solid, fairly pretty little fellow, is called Ernst, in honor of myself! (Already the second godchild! Too much honor for such a good-for-nothing, as it seems, after all, I shall some day

become!) From this poverty-stricken hut I then proceeded to the palace of wealth and good fortune, to the ever-gay old Count Henkel, much envied by me both for his botanical treasures and for his leisure, who received me with almost as much tenderness as though I were his own son. In honor of me he arranged a sumptuous breakfast in high style: fish pie, to which I did full justice, and a bottle of "real old sparkling Xeres." This old wine, and another *bouteille* of a still older and heavier one (I have forgotten its name), made us exceedingly jolly and amiable. After a few hours we had also poured out our botanic hearts for the whole year.

At noon I was with the Merkes. They are always the same hearty people, and never know how to express how much they have lost in me. In the old familiar rooms, the old recollections awakened in all their strength and all the springtime of my life spent there passed through my soul in vivid pictures, which often caused me to feel sad enough when I considered how badly I employed that precious time. I rambled through the old house, and especially through the gardens where every spot has become so dear to me and where some particular remembrance was attached to every clod, to every tree and stone, with feelings of the most painful and deepest melancholy, and the parting almost made my heart bleed. . . .

Toward 8 o'clock I went on to Halle, where Hetzer, Weber, and Finsterbusch received me. We

went together at once to the Halloria, the only inn where our favorite drink is brewed, the pleasantly sour Lichtenhainer beer (the only one I drink), the home of which is Jena, and where we spent a jolly time. Full of merriment and in excellent humor we proceeded to Weber's room, where we had a long, cordial and friendly chat. At 3 o'clock I left once more for Leipzig, at 6 o'clock from there for Hof (where we again passed the two gigantic and celebrated viaducts) and at 1 o'clock from there for Bamberg, where we arrived at 7 o'clock in the evening. For the greater part of the entire journey the way led through magnificent, very charming mountainous country, especially so just before and after passing Hof. There the upward gradient of the railway, as well as the descent afterward, is very marked. A few stations before we came to Kulmbach, the railway runs down, rather steeply and most picturesquely, in the midst of a high semicircular wall of the mountain, where the railway track is banked up some thirty feet high and had to be worked into the rock. On the other side a wild mountain rivulet gushes down. For a long stretch here the train ran down the mountain incline by itself, without any assistance from the engine, so that the speed had even to be checked by the brake. While the weather in the morning was very rainy and stormy, it cleared up in the afternoon, so that we saw the Lichtenfels and the Bamberg country under the most beautiful conditions

of light. Here the vegetation was already very far advanced,whereas around Hof deep snow had still been lying. Already the crops were splendidly green and luxuriant, and everywhere pretty little yellow stars were flourishing among them. In the evening (as on the 26th October last year) I again looked around the beautiful old town of Bamberg, with its old houses, bridges and churches. At 10 o'clock I left by the coach, and on the next morning at 7.30 (Monday, the 25th, to-day) I arrived once more at old Würzburg, where my landlady received me in an exceedingly cordial manner. At 8 o'clock I was once more following one of Schenk's lectures, on medical botany, which, in reality, is of little use to me (except for the beautiful plants which one gets there). Nevertheless, I shall follow them for "decency's sake" and more out of regard for him than myself, for he has half offered them to me. At least by this means I can remain in close touch with him. However, I have had the least luck with the botanical lectures, because, as a matter of fact, I have not heard a single one that has been quite satisfactory to me. . . .

Your faithful son

Ernst Haeckel.

22. Würzburg, *4. 5. 1853.*

Dear parents,

I have been once more in my old *esse* since the beginning of this week, and I am already feeling

much better therein. I passed last week rather sadly, because, except for an early hour with Schenk, no lecture had yet begun, nor had any of my acquaintances arrived here. Therefore, particularly as the weather was beautiful, I scarcely knew what to do, although I sat nearly the whole of the day at my writing-table with the text-book of anatomy before me, with the firm determination to grasp the anatomy of the nerves, of which as yet I have no idea. I read about them with my eyes, and really traversed the whole subject, but when, at last, I reconsidered what I had really learned, I found that it was absolutely nothing. For, in spite of the greatest pains that I took to be very attentive and not allow my thoughts to wander as usual, they did so all the same, and sometimes settled down in the familiar circle of relations and friends; sometimes they paid flying visits to Merseburg, sometimes they were enthroned in the magnificent castle of Ziegenrück and disported themselves in the romantic glens of Sornitz, anon they botanized down the slopes of the sunny valley of the Main, and discovered the most beautiful chalk plants which my luckless knee forbids me to pluck, then swiftly they flew away into the country, where the pepper grows, to India, or wherever the thoughts of an abstruse medico should never wander. It is just the worst thing for me, that at certain times (indeed, unfortunately, very frequently) I cannot easily collect my few stupid thoughts, in spite of

the most serious effort. Nevertheless, the week has passed rather rapidly for me, although I have been fearfully annoyed, and am so still, that I have not passed it with you. How much have I lost thereby! I would have shared the grand family feast with you, would have still seen Aunt Bleek and little Mary, would have seen Humboldt (which for a long time has been one of my greatest desires) at the banquet given in his honor by the Geographical Society, would still have seen my little sister [sister-in-law], would have found many a beautiful thing already in bloom in Halle and Merseburg, would not have fed here for a whole week long on melancholy thoughts and freaks of fancy, and goodness knows how many other confounded "would haves" besides. But it seems to be my fate that everything I undertake is a failure! The most stupid thing that I have done lately is not to have remained in Berlin for this summer. The very lectures I hear now I could have heard nowhere better than in Berlin, and as they are the most important and most interesting ones and I would have heard them there by one of the greatest and most eminent men, Johannes Müller, who has had a particularly attractive influence upon me, I am doubly and trebly sorry for it. It is just physiology and comparative anatomy (the two most interesting subjects in existence) that he delivers incomparably better than Kölliker, although in anatomy itself he is inferior to him (Müller is compared to Aristotle). But, in

any case, these two courses please me exceedingly well; more details about this I can only tell you later, because so far I have only attended six lectures. For instance, Kölliker told us things to-day about infusoria that caused our jaws to drop agape, and made us believe that we were plunged into a realm of myth; as, for example, with certain little animals (*Actinophrys*), two individuals are completely amalgamated into one, and then in the center of these two an egg is developed out of which there emerge many new ones, etc.! In physiology he made a very attractive philosophical introduction in which he clearly and sharply defined the standpoint of the naturalist and completely separated him from that of a man. The naturalist must proceed purely empirico-critically; he must only make objective researches, observations and experiments, and, at the utmost, he can only establish and deduce general laws from the results he has attained. He must never become teleologic, never idealistic nor dynamic, never, in a word, naturo-philosophic. Although I must recognize this real empirical method of research to be right in its absolute objectivity, it does not please me very well, and a general naturo-philosophical view and survey of the whole, after exploration of the individual does very particularly please me and is essential to me.

To-day he has begun with the study of digestion. Physiology is altogether the study of life, of all the

individual activities and functions of the organism! What can there be more attractive? . . .

This summer I shall take the greatest delight in these most fascinating subjects, to the detailed study of which I have long been looking forward. But then, O woe! natural science will have come to an end and the terrible practice will begin, for all the others the longed-for *aurea*, for me the dreaded *cinerea!* Then comes the unnatural study of disease, pathology and therapeutics, etc.

To my great advantage and to his great anger, I have abandoned the course of lectures in medical botany with Schenk, which I followed last week. For my part, I had not derived even the slightest trace of profit from it, although the others who, as a matter of fact, cannot distinguish a burdock from an orchid, at the utmost a violet from an apple-tree, are highly praising it. All I could have gained from it would have been a few rare plants of which I am still in need. But a medical man must not worry about a little bit, more or less of, hay. . . .

I suddenly remember that I have nearly forgotten the chief thing, which might bring comfort to you, dear father. One of the first of Kölliker's introductory words was that physiology, this science of sciences, owes its experience, knowledge and success in the greatest measure to pathology, and that it is only through precise knowledge of the diseased, abnormal conditions that the normal, healthy life can be understood. This has really comforted me

very much and to some extent has reconciled me to medicine, so that, at least, I take some hope and courage in permitting myself to believe that I may become a *medico-botanicus* or *botanico-medicus*, but as such, however, I beg ever to remain, more plant-man than man-man,

Your old faithful boy

E. H.

23. WÜRZBURG, *14. 5. 1853.*

DEAR PARENTS,

I am writing to you to-day at such an unusual hour, namely at 5 o'clock in the morning (now my usual time for rising), that you must not be astonished if my letter appears to be as drowsy as my eyelids. I received your eagerly awaited letter on the day before yesterday. At the same time there arrived a very large, but light, cigar box from Weiss, which came from Merseburg and in which there was something that rattled and shook about very strangely. Burning with curiosity, I opened it immediately, and what do you think tumbled out of it? A gigantic shrub (say *Shrub!*), about one cubic foot in bulk, of the *Viscum album*, with a few hundred blossoms on it. To be sure, it is a very strange, parasitic shrub, which grows on poplars, pines and fruit trees (closely related to the *Loranthus* I found near Teplitz), which we always sought for at Halle but never found there; it is not at all uncommon here. Nevertheless, the joke vastly

amused me, and the entire large mistletoe bough is now suspended in the center of my room, as a substitute for a chandelier. In addition to this, the little box contained a few petrifactions (leaves of a willow) the first that have hitherto been found near Merseburg, and some pretty mosses. For myself, I have now practically put botany on the shelf (N. B. as far as this is possible!) and instead of it I dissect with all my might and main. During the last days I have been preparing the lungs and the heart in the fine dissecting hall of the new anatomical school, which, in spite of its cheerfulness and size, has already acquired that fatal specific odor. I am now quite clear about my courses; they will not be as many as I thought at first they would be. I am now following:

(1) *Physiology*, seven times; daily from 11–12 and Saturdays from 8–9. In the latter hour chemical and physiological experiments are made on subjects and living animals; although Kölliker does not lecture in physiology so well, it is interesting to me in the highest degree. We are now going through the chapter on digestion, and, quite naturally, I have established my menu on strict physiologico-medical lines; that is to say in the evening, for instance, I always "eat" milk.

(2) *Comparative anatomy* three times, from 12–1 and twice from 6–7. This is really the most interesting that one can hear, although it is just the medical *practici* who run it down very much. This

week we have finished with the infusoria and have begun the polyps and corals. If, after all, Ehrenberg is annoyed with Kölliker one cannot blame him for it. For, although Kölliker is generally in the right, he criticizes him too unmercifully; for instance, he said to us: "If Professor Ehrenberg would not have been a professor in Berlin and a member of the Academy there, he would long ago have been handed down to history (*i.e.*, to oblivion). I do not understand how anybody can explain that which he sees under the microscope in so arbitrary and incompatible a manner!" The chief difference is that Ehrenberg believes that he discovers in the infusoria all the complete organs—implements—which the higher animals also possess, for instance, stomach, bowels, lungs, etc., while all this is out of the question, and all these animals, as all new investigators unanimously admit, are nothing but a single cell, as well, also, as are the lowest plants, from which they are only distinguished by their contractile membrane. Although this is quite right, I think one ought, in any case, to recognize the diligence and the pertinacity with which Ehrenberg has followed up and discovered these little animals.

As a textbook I have bought Vogt's *Zoölogical Letters*, by which Kölliker is also guided in his lectures, and which, at the same time, deal with zoölogy (that is to say, the systematic side) and comparative anatomy (that is, the higher, scientific side). For comparative anatomy (founded by

Johannes Müller) is in reality nothing, in the highest scientific sense, but zoölogy in connection with anatomy and physiology. On the whole, the book is very attractively and clearly written, and is well arranged. But it is to be regretted that many passages have been disfigured by the mad radicalism of the author, so that one is immediately tempted to paste black paper over them. The author is the same notorious Karl Vogt of Giessen, "The German Prefect of the Empire" (Reichsvogt), and "Ex-Monarch of the German Empire," as he calls himself. You will probably still remember him from the years '48, '49, '50, especially in the Paul's Church, where he was very insolent and intolerable. Now he lives in banishment in Switzerland, and "is glad that the German people buy his books, while they are abusing the author himself." Nor could I help giving him this pleasure, because the book really treats the so highly interesting invertebrate animals very intellectually and clearly. But what shall we say when we read passages like this: "The progressive expansion of Christianity has *killed* every science, but above all natural philosophy, which necessarily had to oppose it in a hostile manner!" Or, when the author speaks of the childish fairy tale of Christianity, etc. At first it made me angry; but it is really not worth that; in fact, one can only be sorry for him.

(3) *History of development*, with Doctor Leydig, a talented young privat docent whom I followed last

winter in microscopical anatomy. A nice lecture in which also much drawing is done, especially in comparative anatomy; three times from 10–11 o'clock.

(4) *Physiology of the eye*, with Heinrich Müller, twice from 10–11; an interesting lecture in which the study of optics plays an important part.

(5) *Organic chemistry* with Professor Scherer, twice from 3–4 o'clock. Although Scherer is a celebrated chemist, he has an unpleasant delivery, and does not enter much into details, so that this course attracts me much less than I had hoped; also two hours a week are far too little.

Therefore, on the whole, I have taken up exceedingly few real courses. Instead, I shall thoroughly repeat anatomy, dissect a great deal, and thus be able to make up for much lost time. Besides these, there are still a few courses which are run through by all strangers (therefore by myself as well), at least periodically; as, for instance: analytical chemistry, magnetism and electricity, history of medicine (with Marcus: very good!), study of surgical instruments (the most horrible thing that one can imagine) and still a few others which we contemplate as *publica*, because there are scarcely any *publica* proper given here. In addition to all this there come bathing and walking (that is to say, botanizing), so that the time is barely sufficient; apart from that the summer passes so rapidly; it scarcely lasts three months. . . .

If the weather will be fine at Whitsun I shall settle down very comfortably in the beautiful Guttenberg woods, and shall take my delight in the magnificent trees, the delicate mosses and the cheerful singing of the birds (which is sweetly pretty here), and shall likewise make some more sketches after nature. There is a positive superfluity of nightingales here, even in the beautiful public gardens which stretch outside right around the glacis, and which surround the entire town with a garland of green. I have often wished that you were here to enjoy it with me. . . .

Spend a very happy Whitsun and think then of your old boy

E. H.

24. Würzburg, *23. 5. 1853.*

Dear parents,

I have celebrated Whitsun in my own way, that is to say, sadly and merrily at the same time. On Sunday I wanted to go to church; although I arrived there fully five minutes before the hour and no sound of the organ was yet to be heard, nevertheless the people were standing before the opened doors right into the street, so that there was no thought of being able to hear. Instead, I heard a very good early sermon the next morning. As the weather was so fine I would have liked to make a proper excursion. All my acquaintances had undertaken a longer three days' trip to the beautiful

Wertheim, situated lower down, in which for various reasons, one, because it was much too far for me, I could not take part. I had therefore to satisfy myself with reveling in the reminiscences of the past Whitsun holidays, which I have always spent in beautiful country, especially two years ago when I was with Karl in Coburg. The glorious sun, which after many rainy days reappeared in its full splendor, seduced me too strongly to go out, and I resolved, therefore, to wander on my own account into the Zelle woods, an hour's distance from here. Already on the way there I achieved a great triumph; by an old vineyard wall I found a rare, strange fern, *Ceterach officinarum*, for which till now only one single uncertain habitat in the local flora has been known. From the height in front of the wood a magnificent view can be obtained over the whole valley of the Main, including the town and the fortress. Unfortunately I could not sketch, because it was very windy. Inside the wood it was simply grand, so still and calm, and yet so sunny and delightful under the fine old beeches, so that I prepared myself a real couch of beautiful moss (of which I inclose a specimen), at the foot of a very, very old tree—then—(hear! hear!) I read, to my own astonishment, with true and fervent pleasure, a few books of the *Odyssey* in the original text! Then dreamily I stretched myself out from time to time and thought with keen longing of my dear ones far away. Now also

it became very painfully clear to me how very much I miss an intimate friend, one to whom I could disclose my innermost to my heart's desire. It is also part of my misfortune that probably I shall never find one. It is true that I know many very nice people here; but they form a secluded circle of their own, into which I, an odd plant, cannot and dare not enter. That I am not guilty of this painful need you can conclude from the fact that I am really and seriously seeking to gain a bosom friend, almost like Diogenes with his lantern. But what nonsense am I chattering here again; rather, back to our wood, which was, indeed, quite magnificent, and in which I took such delight (almost sentimentally and shudderingly) that lost in the joy of the singing of the birds and the sough of the wind, it was already late in the evening before I could tear myself away from it, and, with my drum filled with lovely ivy, with which I have decorated Humboldt's picture, wandered home by the side of the Main, amusing myself with the sight of a steamboat crammed full of students who had been making an excursion. Such little steamboat excursions were made during the holidays by private parties as well as by the *publici*, and will, so I hear, be made throughout the summer, on every fine Sunday and days of festivity (of which there are one or two in every week!), and this both by the people who are very fond of amusement and by the students who enjoy life no less than the

others. I also took part in one of them on Whit Monday, more for the fun of the thing than for real enjoyment (because I was alone). We left at 2 o'clock in a steamer decorated with flowers and flags, which was soon followed down the Main by two others to Veitshöchheim, which is distant about an hour and a half away. The journey itself, following the multifarious windings of the beautiful Main, alternating between sloping vineyard and little woods, afforded me much pleasure and reminded me a great deal of our last trip on the Rhine, the last time I was on a steamboat. When we arrived at the place of our destination, everybody rushed at once to the Prince's Park, of which my landlady could not sufficiently tell me and depict to me how magnificent and wonderful it is there. But one single glance and I had had enough, for I had scarcely entered it when I saw before me a long avenue of horribly mutilated beech trees, one lopped like the other into regular four-sided pyramids. When, added to this, I saw and heard that the *haute volée* as well as the *profanum vulgus* of Würzburg admired, in loud, high-sounding phrases, the execrable ancient French tastelessnesses, the stone cupids, the figures cut in the box trees, Chinese pavilions, etc., I immediately made a right-about turn and darted as quickly as I could into the Edelmann's Wood, at a distance of three-quarters of an hour from there, a noted botanical habitat, where it is true I found no man (unfortunately!?)

but all the more magnificent forest trees, among which I wandered at random for a few hours. Then I came quite unexpectedly upon an open patch in the wood, from which one has a splendid view over the whole of the Main valley and which took me completely by surprise. There were beautiful, rare and also new plants there, but nothing yet in bloom, because, on account of the great cold, the whole of the vegetation is backward by at least three to four weeks. At 7 o'clock I began the return journey, during which the spectacle of the people, rejoicing in beer and love, who had augmented their Southern susceptibilities severalfold per cent in the "foine preshus" (*herrlich kunstboren*) garden, amused me very much. As everybody, from the captain down to the stoker, was decidedly half-seas-over, we did not arrive at Würzburg till very late, and then under continual salutes from mortars, together with shouting, jubilating, cheering, singing, and the horrible performance by a band of music, which had given free rein to its talents throughout the whole of the afternoon. As often as a few individuals or groups of merry villagers became visible on the banks, the entire ship's company and passengers, several hundred persons strong, raised shouts of "*Vivat hoch!*," waved their handkerchiefs, and made the village musicians answer with a flourish of trumpets. Although I did not see a face I recognized, nor spoke a word throughout the trip, it gave me much pleasure in the glorious weather.

But then there followed a deluge of rain which did not stop for more than one day till yesterday. On that day, however, I made *solo* an excursion over the northern vineyards to Versbach, during which I found the beautiful pearl-hyacinth (*Muscari racemosum*), which we had in our gardens, but I searched in vain for a pretty moss. Otherwise this week has passed very quietly and solitarily for me. . . .

25. WÜRZBURG, *25. 5. 1853.*

DEAR PARENTS,

In comparative anatomy we have now reached the polyps. I keep a small colony of these dear little animals in a little glass, namely the green water-polyps (*Hydra viridis*), which are only as large as a pin's head, and which, when magnified 120 diameters, are nearly like starfish, and have the strangest and most peculiar conditions of life. They sit firmly on a stem, and can stretch their arms far out and draw them in again; they feed on infusoria and propagate like plants by shooting out buds at the side. If one cuts the little animal into as many pieces as one chooses, out of each piece there develops another animal. One can make the most interesting and beautiful experiments with them in a very simple manner. In physiology we have laid out a few hundred *fistulæ* of the salivary glands and *fistulæ* of the stomach. Thus we obtain pure saliva of the parotis and pure gastric juice, directly from the living animal, which, although it

gives you a shudder, is employed for very important experiments concerning artificial digestion. Otherwise, although the material in itself is much more interesting, Kölliker's course does not please me nearly so well as that in anatomy; everything is acquired by books alone. . . . Greetings to you and all other relations, Aunt Berta, etc.,

from your ERNST H.

26. WÜRZBURG, *1. 6. 1853.*

DEAR PARENTS,

It is only to-day that I find time to write to you again, because the marvelous polyps, jellyfish, corals, etc., have occupied me during the whole of last week from 5 o'clock in the morning till 10 o'clock at night, and have given me the greatest pleasure. My passion for zoölogy, which impelled me, even when I was a little boy, to pursue, with special interest, the history of animals before that of plants and which was my favorite occupation, has now reawakened very vividly, and naturally affords me far higher delight since, through my knowledge of anatomy, the way of studying the marvelous internal structure of the animals is now also open to me. Quite involuntarily at every step one is overpowered with astonishment at and admiration for the divine omnipotence and loving-kindness, and I cannot understand how it is that just those very people who occupy themselves with these wondrous miracles and search into their details

can doubt and even deny the creative, all-wise power of the divinity. Besides comparative anatomy I am also kept very busy with physiology, so that, notwithstanding that I have fewer courses to occupy me than ever, I have barely as little spare time as before. The bad weather, which continually poured forth the vials of its wrath in streaming torrents of rain, suited me exactly, because I was not tempted to go out into the beautiful spring nature, which otherwise I enjoy with unbounded delight. Last Saturday I again took part in a botanical excursion, which lasted for about five hours and somewhat fatigued my knee, a fact of which it gave evidence for a few days by making itself very distinctly felt; now it is exactly as it was before. In a wood behind Versbach we were seeking for the most beautiful German orchid, the magnificent *Cypripedium calceolus;* I was happy enough to find two out of the four specimens of these exceedingly beautiful and rare plants that were found. A single very large flower, at the utmost two, stands on the slender multileaved stem. Four petals of a beautiful dark purple-red, narrow and wavy, stand opposite one another in the form of a cross. In the midst between them there lies a small boat-shaped petal, and underneath it a very large one of a magnificent golden color, hollow, and shaped quite like a wooden shoe or like a little round boat. For this reason this splendid plant is also called the "lady's slipper." How

happy I was over this long-yearned-for find you can scarcely imagine. Besides them, we also found one of the most beautiful and largest orchids, the dark-brown, white-spotted *Orchis fusca*, and I was also happy enough to find some specimens with yellow flowers of a very common kind of vetch (*Vicia sepium*), which is blue inside. On the way back we still found a charming little primula with white blossoms: *Androsace septentrionalis*. . . .

For various reasons I am now very little in the company of Bertheau, La Valette and Steudner, who are daily playing whist together. On the whole they are far too fast, and when I go with them to have a drink they do nothing else but try to induce me to drink beer and fall in love, which they believe to be the only means of salvation to make a man of me, and one of these occupations appears to me to be just as obnoxious and superfluous as the other. I have also rather fallen into Schenk's bad books, because I had not followed his tedious lectures, on which he must have set his heart.

Last Thursday, being Corpus Cristi Day, there was a high show, about which my landlady had not been able to tell me enough for weeks previously and which appeared to me almost to be frightfully magnificent. In all my life I had never seen such a procession. It lasted from 8 o'clock till 12 o'clock. The people had flowed in from every part of the countryside, the entire town was festively decorated

with garlands and flags, all the streets were strewn with flowers, the hall of the Julius Hospital was converted into a temple with altars, all the soldiers were in full-dress order, as well as the so-called "Landwehr," about equal to the Berlin citizen force and the Merseburg rifle club put together, only about ten times as unmilitary, commonplace and ridiculous. Among them were the most comical and grotesque figures, looking quite unique in sky-blue uniforms with heavy shakos; for instance there were tailors with long beards, carpenters with bearskin caps, as axe-bearers. The procession itself was the most mixed and fantastic that one could imagine; in many respects it was only one step from the sublime to the ridiculous and despicable. The different stately dresses, with their outward splendor, their peculiar character, presented so much that was remarkable that one could write a whole book about it. Among the rest, all the representatives of the trades marched with their flags, insignias and banners, then came the school children in specially festive garments, the magistrates and members of the government in plain clothes, the Capuchins in their brown cowls, and all kinds of monkish people, a great number of the Catholic *stud. theol.*, then long ranks of little and big girls dressed in white frocks decorated with flowers. Everywhere among them there were singing and shouting groups of priests, who rang little bells, burned incense, etc. From time to time they

stopped and mass was read at altars specially erected for this purpose, during which all the people fell on their knees, and we were regarded with side glances because we did not follow their example. The bishop and others of the higher clergy, gloriously attired in purple and gold, marched or rather were carried under a baldachin, and then, no less well-nourished, shining with fat, continually taking snuff, came the canons in violet, who reminded me strikingly of the Merseburg *ditto* individuals. Between them again, from time to time, there came a golden Madonna, or a life-sized silver saint, hung about with all kinds of little chains and little rings and little ornaments, clanking and rattling like a child's toy, borne by four white-robed virgins (not, in any case, to be accepted in the real meaning of the word); then again, long rows of devotees who sang after a reciter of prayers (who behaved like a cheap-jack) but who, nevertheless, comfortably carried on their conversations during the intervals, laughed, and enjoyed the magnificence of the procession. . . .

The professors also made a very good appearance in the gowns of their different faculties, the medicos in green and the lawyers in red, etc. The Catholics are all obliged to follow, for which reason, Schenk had fallen "seriously ill" a few days previously and many other medical men were away.

With all this lust of the eye it was also intended that one should hear something proper, and that

is why throughout the morning the cannons were fired off at the fortress above, which had a perfectly wonderful effect on those down below. In short, it was a turmoil and a din beyond all possibility of description. . . .

I envy you your great cattle-show at Krolls; I would far rather have preferred to see it than all this rumpus of a fair and carnival procession. . . .

Now, still a word to you, my dearest mother, with regard to your desire to have me with you in Berlin for the winter. Much as I would like this myself, it is quite impossible of realization this next winter. . . . It is just during the next winter that I shall have to follow the very lectures for the advantage of which I have principally come here, and which elsewhere, and, in any case never so classically as here, are scarcely delivered at all. Chief among them are Kölliker's microscopical lectures, for which I am already burning with eagerness; next, Virchow's general pathology and pathological anatomy, about which everybody is raving. And, lastly, it is said that two very capable young professors are coming here to take the places of the old pathologist and the old surgeon, who will now retire on pension. Besides that, I have already subscribed for the winter course for the preparation of arteries and nerves, which is connected with exceeding difficulty and discomfort in Berlin. If, therefore, I went to Berlin where I would miss all this next winter, it would be one more mistake

regarding my lectures, which I would have to add to all the many others I have already made. It would have been far better if I had remained there this summer, and then I would have been able to follow the lectures of classical Johannes Müller, which I shall always regret having missed. It is much more probable that I shall come to you next summer, as it is most unlikely, under any circumstances, that I shall go either to Heidelberg or Bonn. After all, the details about this can be discussed much better by word of mouth. If I come once more to Berlin I shall probably stay there for good. And then, again, next winter will have come and gone before I can turn round. There are only four months before it arrives. And for half of them, two full months and more, we shall be together in Rehme and Ziegenrück. You can scarcely imagine how I am already looking forward to this glorious life in the autumn, most of all in Ziegenrück. As for the books which we shall read there at home, dear mother, I have thought of the following: I to bring Humboldt's *Aspects of Nature*, Schubert's *Mirror of Nature* (which pleased you so much), and Schleiden's *Plant* (perhaps!); you, I thought, ought to bring Goethe's *Truth and Fiction*, also something by Schiller, Goethe or Lessing (perhaps *Laocoön*) and Immermann's *Münchhausen*, if you can possibly procure it somehow. I would so very much like to read it, as it is generally extolled as the most classical and the best German

novel. Besides these, I shall also bring Vogt's *Zoölogical Letters*, some parts of which will surely interest you. If you should not agree with this, make me another proposal; I should then suggest descriptions of travels, about which I am very keen indeed at the present time and which I would also devour with passion if I had the time. Perhaps you could borrow somewhere the excellent travels of Darwin, Pöppig, Tschudi or Humboldt, or something by Kohl. Perhaps father could get something from Karo, who, for example, has Tschudi's *Journey to Peru*, also *Münchhausen*. In any case, you have plenty of time in which to think it over. . . .

With the same fervent love, I remain ever your faithful old boy

E. H.

27. WÜRZBURG, *18. 6. 1853*.

DEAR PARENTS,

. . . Nearly every evening I go with my Danzig friend Hein, a very nice man, who is almost too reasonable, clear and thoughtful for me, over the bridge a little way above the town, where the bathing-place is very nicely situated at the foot of the fortress. Then we throw ourselves with genuine delight into the flood of the Main (which at the present time is as yellow as clay and reminds me of the Unstrut, and which some day will perhaps become green), have a good bathe, and afterward go to *Siberia*. This is one of the few places here

where one can get no beer, but milk of every description (preferably we stick to the sour, which is here called *gestöckte*, milk); one sits on a lawn situated on the slope of the hillside in a valley that branches off south of the fortress and is exactly opposite to it; and the best of it is that scarcely any people go there at all, and, at the utmost, one hears only the song of a few birds. This is quite delightful, and is my chief pleasure. I do not take any long walks now, because it occupies such a long time before one crosses the hot chalk hills and reaches the shade, and this does not seem to be the best thing for my knee. Likewise, my time is very limited; it is particularly comparative anatomy that makes the afternoon pass without one being aware of it. Kölliker has now gone through the starfish and sea-urchins, and quite suddenly I have taken a frightful fancy to go to the seaside in order to examine these wonderful creatures and to make the acquaintance *in natura* of their marvelously artistic structure. That would be quite another thing altogether to the pictures, although the latter are very good. They are already to be counted by the hundred in my notebook. If only I had my microscope! In any case, it is now about time to hurry up Herr Schieck a little bit. You might be so kind, dear little mother, as to ask him "whether my microscope is in hand, and beg him to have it ready by the beginning of August, as he has promised. I must absolutely have it in the winter, for

Virchow's lectures!" Tell him that expressly; but be very polite, and be sure, in any case, to admire very much the magnificent, choice, original copper etchings with which this original man has papered his entire room, and which are his sole pride and hobby. But be so good as to go there yourself, because I begged him to give you the microscope when it is ready. Mother will then be able to bring it with her to Rheme.

In physiology many experiments are now being made which, however, are unsuccessful, partly through the fault of the anatomy servant, and which often cause many merry and laughable scenes. Thus the other day he was told to feed a cat with milk, because Kölliker wanted to show us the transference of the chyle into the chyle vessels of the intestines; he pretended to have done so, but instead of that had drunk the milk himself; when the cat was opened nothing was found in the intestines but some bread and potatoes, not a drop of milk, which caused no end of hilarity. Besides, we found a tapeworm a yard in length. Although in reality these are quite nice little animals in their way, I fancied all that evening that I felt quite distinctly the gnawing of such a creature in my own *tractus*. This, however, you may take to be a hypochondriacal fancy.

Last week my poor body had also to subject itself to an experiment in physiology. Kölliker wanted to show how quickly saliva changes starch

(flour) into sugar, and for that purpose spat into a test-tube till it was half full; at the same time he requested one of us to fill another test-tube in a similar manner, and, as I chanced to be next to him, this noble lot fell to me. Scarcely had the saliva been in touch with the paste for a few minutes, than the "Saliva hæckeliana," as Kölliker called it, had changed the whole of the starch into sugar, while his own had a much weaker effect; naturally, this also caused much laughter and rallying. . . .

28. WÜRZBURG, *27. 6. 1853.*

MOST FERVENTLY LOVED BIRTHDAY CHILD (*Geburtstagskind*),

So I cannot be present even for your birthday, my dearest mother, and must celebrate it alone and in quiet, as I have already had to do father's and my own several times. This time I cannot, as I usually do, throw myself joyfully and happily around your neck and tell you and make you feel by a kiss everything that moves my innermost heart. I have often felt rather sad lately when I have thought how, as a rule, you have had your two boys (or even all your three children) with you on this festival day, and how you thanked God in company with them for all his kindness and his grace, and how, on the contrary, now you have none of the three with you whom you can hug and kiss. But although outwardly we are so far separated from you this time, and I, in particular, for the first

time, we are inwardly all the more fervently and intimately together in spirit, and with you we pray to God most humbly in our very soul that he might preserve you to us, as our dearest treasure, for a very, very long time and in good health. Yes, dear mother of my heart, it is surely one of the greatest and most important blessings of God which he has shown to me and for which I cannot sufficiently thank him every day, that he has given me such a good, pious mother, who has preserved me from my very childhood in the fear of God, who has implanted in me the first and firmest foundations of my intellectual and moral education to make full use of the precious time, and who has taught me to avoid evil in whatsoever form it might assail me. This is only becoming clear to me now, and has only lately been revealed to me, since I have entered independently into the world, have been exposed to manifold and new temptations, where I have made closer acquaintances in my own personal experience with the thoughts and aspirations of the human heart, what immense influence the first maternal education has had, and how the effect of it continues throughout life; and then I have thanked God most fervently, and have prayed to him to preserve my own dear mother to me for a long time yet, to be my comfort and my joy. . . .

Flowers must never be missing on your birthday; therefore the flora of Würzburg has sent its representatives, which it must be admitted are less beau-

tiful than selected rare ones. Probably most of them will scarcely interest you and, as you do not know them, their habitats will not appeal to you, but I think that through their means you might accompany your boy in his botanical wanderings. Also, as far as the two drawings are concerned you must take the will for the deed, and you must consider the best of them to be the deep filial love with which I have thought of you in every line. The sketch of the fortress of Marienberg, which I have made from the south side of the Nikolaus hill, above my favorite place "Siberia" in the lonely valley, is a representative one of a collection of sketches of the surroundings of Würzburg which I intended to have finished for your birthday, but which up till now consist of outlines that have been begun and the completion of which has been hindered, partly from want of time and partly by the rainy weather. Even this one so far completed has been finished in a beautiful spell of rainy weather under the shelter of a vineyard shed for an umbrella. At the first sight of the drawing you might feel as my landlady did when I first showed it to her, and when she cried out in astonishment: "Jesses Maria, Herr Doctor, what a skillful man you are! Your mother must love you even against her will! Nay, how naturally you have depicted the Main and the steamers on it, just as if they were all alive!!" She took the round tower to the left to be the crane, and the two walls of the vineyard to be its arms.

Probably she believed the vineyard itself to be the Main, which would naturally have been very pleasing to my artistic self-consciousness. But how can one draw the confounded shapeless vineyards in any other way than by one line always near to another! At best one could dot in many rows of green spots instead of the parallel lines. From the external appearance of the mother with the two boys you would scarcely take it to be one of Raphael's Madonnas! Indeed, in drawing it I thought less of the Virgin Mary than of my dear mother, and therefore you cannot contemplate it as the representation of a Madonna, but as a family symbol of maternal love, which in reality it is.

The two real old Würzburger "Bocksbeutel" I hope that your Rhenish-wine lips will not disdain. Probably they have been grown just by the side of the fortress hill which I have drawn. I hope you will like them, as I hope they are good!

As for the rest, I have nothing to add but the wish that you may celebrate your own particular festal day right well and cheerfully and, at the same time, think lovingly of your faithful old Ernst, who in thought will be entirely with you. . . .

29. WÜRZBURG, *8. 7. 1853.*

DEAR PARENTS,

I am employing the evening of Mimi's birthday by talking for a little hour with you once more. The whole celebration of this family festivity has

consisted for my part in my having eaten for dinner to-day with my landlady her much-beloved goose, which she had been cramming for weeks in honor of this day. To-day there is being celebrated here the feast of Saint Kilianus, a most important festival in this town, and, at the same time, it is the last holiday this summer (really the last, what a pity! what a pity!). Once upon a time this saint washed his feet in a local spring, and since then this spring, above which a great church was subsequently erected, has flowed only once a year, that is to say on this very day! while otherwise it is completely dry throughout the year!! And on this day this spring possesses the most marvelous qualities, it makes blind those who can see (or perhaps *vice versa!*), etc., !!! Consequently, on this occasion the whole of the country-folk from lower Franconia have come into the town in great processions in order to try their utmost to obtain a little flask of this delicious curative water (stagnant rain water, with which the sacristan has filled the basin, which otherwise is usually empty, the day before.) It is really an amusing and yet a sad sight to behold this stupefied peasantry, thronging with the other members of the populace, pressing, pushing, struggling, etc., for a few drops of water, being more than happy if eventually they succeed in crossing themselves on the forehead with it or rubbing it into their eyes. This power of the clergy and of superstition here is still monstrous. . . .

I have passed your birthday, dearest little mother, in spirit with you, very quietly by myself; in the afternoon I went for a walk to the highest point of the Nikolaus hill, on which the Kapelle is situated and which is the highest point in the whole neighborhood. Hitherto I had never gone so high and was now wonderfully surprised to get a magnificent view, first of all, over Franconia, and, secondly, down the Main. Toward the north the Spessart appeared on the horizon; toward the west the Rhön with its highest peaks; toward the east the Franconian mountains. The Main valley, with its innumerable windings and turnings which I could follow right down a great distance, presented quite a magnificent appearance; oh, how longingly I wished that you were here so that you might have shared this great joy with me! It is only half a joy, in any case, when one enjoys such a thing quite by oneself; the effect of the light was also quite unique; gigantic cloud shadows overcast the mountains. And, added to all this, there still came some charming botanical gifts, such as I had not been favored with for a long time. First of all, I found a nice woodruff with blue flowers (*Asperula arvensis*), and then a beautiful, and not hitherto found, umbelliferous plant (*Turgenia latifolia*); after that a very strange fern (*Botrychium lunaria*) with a fruit ear or raceme. So many treasures had not been offered to me at one time for ever so long. I was quite overjoyed. And then, in this blissful-

ness, this searching, this seeking and admiring, I wandered rather far into a district that was quite unknown to me before, and in the end was overtaken by a violent thunderstorm, during which the echo of the thunder in the gorges and valleys was wonderfully effective. But my being soaked to the skin was not suffered in vain. When I regained the summit of the Nikolaus hill, a magnificent double rainbow was spread out before me, and to my right hand (from south to east) the lower part reached right down below and seemed to rest on the Main bridge. Thus I obtained a view of a rainbow in the valley from the height above, and in the far distance the blue mountains served as a background, a strange spectacle which I had only once before observed, and that was on the Inselsberg in the Thüringer Forest. If only you could have shared these delights with me, this afternoon would have been the pleasantest that I have spent here! But the best is still to come. As I came on my way home, singing and bounding with delight, and had arrived at a wall in the suburb, I noticed how the convicts were cleaning the surface of it of weeds. For some time my attention had been attracted by a fine, big, sulphur-yellow cinquefoil among them, which I would only have been too glad to inspect at close range, and now when I could take possession of one I found out—imagine my joyful, astonished surprise!—that it was *Potentilla recta*, which Schenk pretends to have sought for in vain among the

entire flora of Würzburg, and, without guessing it, I have so often passed quite near to it. Naturally, I ran posthaste to him with my precious find and related the story of my discovery to him. You ought to have seen his face! At first he seemed to be dumbstruck with surprise, and then, half in a tone of anger and half of friendliness, he said: "After all, you are a child of the devil; where have you dug that out?" You can well imagine my pride and my happiness! Then on Sunday we wandered out with a nice Swiss (a merchant whose acquaintance I had already made in Berlin), and I had to show him my newly discovered habitat; then we went once more to the Nikolaus hill, where I found a great rarity, quite new to me, the long-wished-for *Althæa hirsuta. O gaudium!*

And now, after all, I have gathered together quite a nice bundle of hay, which corresponds to about four volumes of my herbarium, partly from the flora *herbipolitana*, partly from the local Botanical Gardens, and often I feel quite nervous about transporting it all to Berlin! But these vegetable pleasures are still in a way surpassed by the animal ones. By this I mean to imply comparative anatomy, which, after all, is a unique science! We are now diligently dissecting snails, shellfish, etc. . . .

My best thanks to you, dear father, for your account about your studies, the Geographical Society, etc. When Herr Dingel, of Stuttgart, in his writings about France runs down the French-

man so much, I am quite of his opinion. I cannot bear this supercilious and slimy nation, and am constantly quarreling about them with Schenk, who takes their part. I cannot reconcile myself to their false, veneered character. . . .

30. WÜRZBURG, *18. 7. 1853.*

. . . Last week I emerged quite unexpectedly from my usual, quiet, everyday life into the great world of humanity. How it happened to me, I can scarcely yet realize myself. On Sunday, the 10th, the élite of the professors here, Virchow, Kölliker, Müller, Scanzoni, Scherer, etc., arranged a great excursion to the Guttenberg woods. Each of them had invited some friends, chiefly young doctors and specially favored students, whom he undertook to feed as his guests. Now Kölliker took it into his head, God only knows why, to invite me among his guests; what a shock it gave me you may well imagine. The affair passed off better than I had expected. In the morning at 7 o'clock the excursion, consisting of about 75 persons, set forth, and to my absolute terror about one third of the party were young girls. However, I have learned how to navigate safely around such rocks (namely, the task of entertaining these ladies) so I did not speak a single word to one of them throughout the day. . . .

In the wood itself it was very nice. As it is a very frequented and a most important pleasure

resort of the people of Würzburg (only yesterday there was a party of about a thousand to eleven hundred persons there!) various sheds, benches and tables are erected in the middle of the wood, on a somewhat elevated place which is surrounded on all sides by grand old trees. On one of the highest of them an outlook place is built, which is reached by stairs, and from it one can obtain a wide vista over the extensive wood.

There the respective wives of the professors unpacked all the treasures of their kitchens and larders before the famished palates of their guests and endeavored to regale them, in which process each lady professor did her very best to surpass the others. It was only Frau Professor Kölliker, by the way a very beautiful and distinguished lady, who had not attempted to compete in this contest. It is one of the very few bad, but at the same time all the more weak, sides of Kölliker's character, that he is somewhat stingy (*horridum exemplum!*) and thus it happened that we who were Kölliker's guests (among whom also were my acquaintances, Bertheau, Heim, Gerhard, Passow, La Valette, etc., which afterward gave rise to many jokes) were rather out of it in all this display of luxury, where milk and honey flowed abundantly; indeed, I must absolutely confess that the little titbits and nibblings increased rather than appeased my appetite; and, after all, it was I who took less than any of the others! But all these little trials were soon for-

gotten when after a time I discovered a clear spring and some magnificent strawberries in the wood, and later a few beautiful flowers which were quite new to me, *Rosa arvensis* and *Campanula cervicaria.*

After breakfast, as well as after dinner, the young folk tried to pass the time as well as they could with all kinds of games and amusements, such, for instance, as blindman's buff, the game of the knotted handkerchief, dancing, singing, shooting, skittles, walking about, etc. You can well believe me when I say that I took no part in all this. Nevertheless, I did my utmost not to remain too far behind the others. In any case, I was heartily glad when at 8 o'clock in the evening four different omnibuses and several other conveyances were made ready for the return. I was very nearly of the same opinion as the Swiss from Freiburg when, after he had become so tired of loafing about all the day long, he said that he would rather be an anatomy servant for a week than have to kill every Sunday in so shameful a manner. The best thing in the whole affair was, that I made the acquaintance of Virchow, to whom I bore all kinds of greetings from Georg Reimer, to whom he gave me hearty greetings in return. Altogether the cordial, open South German tone which ruled during the whole excursion, during which the gentle young ladies drank beer, shot, played skittles, etc., with the gentlemen, amused me. . . .

Last Sunday, yesterday, I went for the first time

into the fortress. In each year it is only opened to the public on two festivity days; the cause for it yesterday was the "Continuous Prayer," a strange observation of the Catholic Church, according to which prayers must be said without any intermission, at some place in the whole of Bavaria throughout the year, wherever that place might be (that is to say, words without meaning are reeled off mechanically), and in this, naturally, one place after another takes its turn. The turn of this Continuous Prayer happened to come round to the fortress. I had expected to get a very fine view from up there, and I also intended to inspect the interesting arrangements of the fortress works, but I saw nothing of all this, for the simple reason that sentries were posted everywhere and they hindered one from guiding one's steps in any other direction than to the fearfully and wonderfully decorated chapel—or to the beer cellar of the house steward; indeed, the latter, by reason of his beer, which has the reputation of being excellent, attracted most of the people. For myself, I respectfully declined that treat.

The approaching end of this summer term, which has passed for me quicker than any other, can now already be felt in a terrible manner. The professors who have not yet gone through a fourth part of the work double their lectures and go through the remaining part most superficially and inaccurately; and this can be said particularly of Kölliker, who has been dwelling on the lower animals too

long—which I must admit was very enjoyable for me—so that he has not yet even reached the insects. Therefore there is no idea of coming to a proper end. I have now become somewhat better acquainted with Kölliker by my having brought him last week some eggs of a mole cricket (*Gryllotalpa*), which I had come across in the Botanical Gardens. He asked me to examine them, as well as the development of the young from the egg, and for this purpose he placed at my disposal a microscope which I could use for the work at any time in his room in the School of Anatomy. So that now I am occupied with this for a few hours daily in the morning. It is a highly interesting subject and could lead to practical results if I were not so fearfully clumsy, even in the preparation! . . .

The best greetings from your old

ERNST H.

31. WÜRZBURG, *28. 7. 1853.*

DEAR PARENTS,

. . . This physiology of the nerves is really a queer and strange subject, but most interesting; but what a pity it is that one must or should (really ought to) come actually to the conviction that the whole of the marvelous human mind is nothing but a little piece of gray nerve substance, from which white threads with ganglia, each of which exercises a special function of the brain and, at least, function of the senses, radiate in all direc-

tions throughout the body! I am not yet quite seized of this—but more about it verbally. . . .

In old love and thankfulness

Your faithful Ernst H.

32. Rehme, *18. 8. 1853.*

My dear dwellers in Ziegenrück,

. . . I arrived here at 7.30 in the evening, and was met by mother and Herr Corthen at the station. I find Mama very well and cheerful, and we live together here in a very rural house, very nice and quiet and homely, and I feel all the better for it. But, after all, the bath here is very primitive, "uncivilized," as you call it, assuredly not pretty, and as for the country it is rather melancholy, but an ideal place in which to lead a homely and quiet life. We are enjoying it with all our hearts, and I live very comfortably with Mama, and it is very convenient for myself. The whole morning is dedicated to my dearest inorganic treasure, my incomparable microscope; a fellow to it is not to be found anywhere, unless, possibly, with Virchow at Würzburg. You cannot imagine what super-terrestrial bliss I feel when I revel in it. . . .

Once again the heartiest greetings from your

Ernst.

33. Rehme, *30. 8. 1853.*

My dear father,

. . . Although daily we have wandered at random in search of discoveries in every possible direc-

tion, we have not been able to find the slightest beauty in the country. With regard to the flora there is still less to be found. With the exception of a single salt grass (*Poa distans*) on the salt works, I have not found the smallest new or even remarkable thing. So I dissect all the more and work with my microscope, chiefly on frogs, mice, snails, grasshoppers and other insects. The bliss of the microscope need not be described further. It is really the highest thing that I know. . . .

I scarcely occupy myself at all with botany; except microscopical phytotomy and the examination of a *Herbarium constantinopolitanum* by Roë, which a Russian princess, Handjeri, who has a farm in the neighborhood and is acquainted with Corthens, has sent me for inspection, a circumstance that appears to me to be quite incomprehensible. . . .

The best greetings to yourself from your son

ERNST.

34. ZIEGENRÜCK, *4. 10. 1853.*

MY DEAR OLD MOTHER,

So the beautiful time of our having been together has passed, and I must write to you again, which at first is always rather painful to me, because I like to tell you everything personally and at once. Being together with both my dear brother and sister has, however, somewhat mitigated the hard separation from you this time, and it is nice to be

able to communicate with one another by letter. During the first days after your departure nothing seemed to go quite well; I was always missing you; now somehow we have grown a little more accustomed to it. The day of your departure was a really unlucky day for us. Nothing seemed to prosper. . . .

But it was I who had most of the sorrow and the greatest ill luck. For, first of all, two of my little salamanders, brought to the light of the world so fortunately by means of artificial premature birth, have died during the night, so that out of my thirty embryos I have now only nine alive. Secondly, during the night one of the crayfish had yielded up his noble soul, and the second one followed his example in the forenoon. Thirdly and lastly, I tormented myself in vain the whole of the morning with the classification of a dear little moss, the name of which I do not know even to-day. . . . The next day passed somewhat better. It began for me with a very joyful event. The doctor sent me a dear little snake which he had caught by the wayside. The little animal is a real pet and it is already becoming quite tame; for example, when I take my coffee it drinks milk very nicely out of the saucer. In the afternoon when I went out for a walk I found many salamanders in the river Sornitz, so that now I have my washing basin quite full of them. After the rain they come out in swarms. When I have a few dozen of them I shall

preserve them (in spirits, so that I can take them with me). On Sunday I found another pair of them in the third bend of the Saale valley, in the direction of the Linken mill. It was very fine in the afternoon, and Karl and I took a very long walk through the meanderings of the Saale valley behind the Conrad, where the fisherman's hut stands down below. . . .

The daily walks agree excellently with me. At the present time I really feel very well, even notwithstanding the joyous life here, the grandeur of which you yourself have experienced. I would really be very sorry if these dear ones would have soon to leave Ziegenrück, this primeval paradise of "uncivilized mankind," as seems to be not at all impossible in view of the splendid offer which Karl has received to-day. . . .

35. ZIEGENRÜCK, *13. 10. 1853.*

DEAR PARENTS,

. . . We continue to be very jolly and cheerful here; I feel much better and much more free of worry now than I have for a long time, the reason for which is surely as much on account of the seclusion from all the outside bustle of humanity as of the inexhaustible magnificence of nature in this mountain paradise; yes, hypochondria is partially relegated to the background to such a degree that I venture to look again with curiosity, with a strange kind of love of life, and with a feeling of

anticipation into my future life, whatever it is to be, which I had lost for a long time. Item, here is my Tusculanum! Since your departure, except for the constant impenetrable fogs in the valley which either descend or rise in the morning, we have had at intervals several wonderful autumn days, which were only to be distinguished from those when you were here with us by greater cold, the multicolored variety of the woods and the autumnal surroundings, and a gentle and frequent rainfall. One of the first days was really quite like spring, and I made an excursion with Karl to the Haken mill, where we wanted once to take Papa. Admittedly it is rather far off (we left at 3 o'clock in the afternoon and only returned at 7 o'clock in the evening), but the way there (over the Conrad and the Lasterberg, even further westward into the gorges along the Saale) makes it remarkably worth while; and how grand is the situation of the mill itself! Inclosed on both sides by high woods, in quite a narrow and very lonely gorge of the Saale, over which a giddy plank leads to the rocks on the other bank! It is a very tall and conspicuous house, furnished with many outbuildings, which surprises one in this solitude. . . .

The day before yesterday (Tuesday the 11th), I made an excursion which was even more charming than the last (on Saturday). In the morning Karl had a lawsuit in the "Liebsten"[1] (Liebschütz). I

[1]Liebsten—dearest.

accompanied him early, at 7 o'clock, over the Hemmkuppe to the Liebschütz heights (where, as far as I can remember, Papa saw the beautiful view that opens toward the east and south, particularly over the Saale valley toward Lobenstein), where I strolled along for a considerable time alone and at leisure and sought for mosses and lichens. Then I returned by the old road, and slid (halfway I rolled) down the steep northern slope facing the Hemmkuppe, where I came to a charming little rivulet which runs into the Saale. Then I clambered along the steep slope by the Saale, and after two hours I reached the beginning of the exceedingly beautiful Ottergrund, the grandeur of which Karl had already described to me so well, but which still exceeded all my expectations and may easily be compared to the grandest and wildest mountain streams of the Thüringer Forest, yea, indeed, of the Harz. Apart from rich flora of the most delicate mosses, which furnished me with material for my microscope for the whole of the following day, this exceedingly beautiful Ottergrund, which unites in itself all other beauties of nature in Ziegenrück, possesses such a number and variety of magnificent trees, somber mountain slopes, lovely meadow lands and romantic masses of rock on the banks of its mountain rivulet, which dashes wildly over bowlders and forms graceful cascades, so that it was only with difficulty that I could tear myself away after several hours. . . .

On Sunday we began to read (Stein's life) with the doctor and his wife. The day before yesterday we went downstairs in the evening, as it was Frau Doctor's birthday. We were very jolly. In reality, they are quite sociable people. I am very much chaffed by them about my misogamy. Thus the Doctor, when he found me absorbed in mosses yesterday, changed the history of the creation in the following manner: "And God said, It is not good that man should be alone, and he created around him leafy mosses and liverworts, and lichens, and a microscope!"

I have now read with very much interest and profit the popular astronomy by Rauch, which you, dear mother, brought for me. It is a very instructive book, above all, written very intelligibly, and is easily to be understood by the layman, and surely it would also make the main outlines of astronomy perfectly clear to you, dear father, for which you have always longed. Try to read it some day. Personally, I have had scarcely an idea about it hitherto, and have been very much enlightened by reading it through once. If you happen to see Georg Quincke, greet him heartily from me and tell him that, if it is possible, he ought to follow the courses of physiology with Helmholtz at Königsberg. He is regarded in Würzburg as the most exact physiologist of the present day, and as one who in particular has treated all the chapters of physiology that belong to the sphere of physics with marvelous mathematical exactitude. . . .

We have been thinking very much of our poor, poor Aunt B., and are heartily sorry about her sufferings. If only that could be of some help to her! It is far too hard and cruel an affliction, after she had so greatly improved during the summer, to have to lie down again now prostrate and helpless. In such cases one would really like to ask God how he can allow such a thing to happen!

We all greet her from our hearts and hope that she may soon have some alleviation of her torments, in which may God grant her his aid! . . .

The best greetings from your old

ERNST H.

36. WÜRZBURG, *26. 10. 1853.*

DEAREST PARENTS,

. . . Yesterday I left Z. by the carriage belonging to Counselor Voigt, of Gesell, where I arrived at 7 o'clock in the evening. At first I paid a visit to the chemist Warnekroo, a very nice and well-educated young man, to whom the Doctor had given me a letter. Then I went to call upon Frau Counselor Voigt, who received me with effusiveness and looked after all my needs, and wanted *partout* that I should go to bed, an offer of which, naturally, I could not avail myself, for the reason that the coach was to leave at 1 o'clock. I drowsed during the night hours very comfortably in the warm room (while it was freezing out of doors), with a bright lamp and a valuable botanical work (Krombholz's

Illustrations of Sponges and Reichenbach's *Illustrations of Grasses*), which the chemist had lent to me. In the morning at 4 o'clock I arrived at Hof, whence the train left at 6 o'clock. The whole journey passed without further incident; the only thing to be mentioned is that, whereas at Easter it took me two days and three nights to cover the whole distance, it took me only one day and a half this time. I arrived as early as 11 o'clock at Bamberg, at 1 o'clock at Schweinfurt, and at 6 o'clock here. Naturally, my landlady received me with the same old tenderness and pleasure that, with her true Bavarian homeliness, she always has at her command. She had been expecting my arrival every day for the last fortnight and bought beautiful fruit, and, among other things, had decorated all my cupboards, etc., with the most luscious apples and grapes, which, together with some magnificent plums, I have already been enjoying very much to-day. The fruit is now as excellent as it ever is here, and I shall avail myself of it as much as I can. What a pity that you cannot share it with me; it would then be twice as enjoyable to me. I would like so very much to send you a little box of grapes, if only the postage would not be so excessively high; in any case, they would be too violently shaken about. One of the first remarks my landlady made was: "Oh, Herr Doctor, you will be very happy about your little children!" I discovered that she referred to my family of tree-

frogs, the members of which had actually grown from half an inch in length to quite stately fellows of from one to one and a half inches long, and had acquired voices that resounded throughout the day. But to reach that condition they had been given flies which were brought specially every day *en gros* from the baker's! . . .

The moral fit of the blues of yesterday has already been somewhat alleviated to-day, which is partly to be attributed to the first visits I have paid. They were no less than five in number, and were (1) to Professor Schenk who, beyond my expectations, received me in a very friendly and kind manner; (2) to Professor Kölliker; (3) to Professor Müller (a young, very timid, but capable *extraordinarius*, who, together with K., directs the private circle); (4) to Doctor Gsell-Fels, a very rich young Swiss, Dr. Philos.,who is now studying medicine, is married, and is a bibliomaniac to an extent that I have never met before. He must immediately have all the newest and most precious works. I try to keep his benevolence as warm as possible, so that I can make use of his excellent library, which he has placed entirely at my disposal; (5) to Dr. Leydig, a very talented, capable, nice and amiable young privatdocent, who occupies himself almost exclusively with microscopic observations, specially with histology and the development of animals, principally of the salamander. I am on a very friendly footing with Dr. Leydig, the reason for which might

be traced to the fact that our natures show many points of sympathy; also we have on several occasions poured out our hearts to one another (that is to say, our natural-science hearts). Thus, for example (although in his own branch a very capable and skillful observer), he is outwardly, particularly in his contact with people, rather awkward, and not infrequently as clumsy as I am myself (for which the elongated bones of his extremities might be responsible); in addition to an immense love and adoration for pure natural science, principally for anatomy and physiology, he also exhibits just as great an abhorrence for medicine in general, but, above all, for medical practice (by the way, he is also Dr. Med.), as I do. Beside, that he is as little fond as I am of the bustle and turmoil of civilized mankind, he is happiest with his beasts and his microscope, he is also hypochondriacal, etc., etc., etc.

Again, for example, when I found him unwell he growled a great deal about the quackery of medicine, which promises to help other people but cannot even help itself. He is the son of quite poor parents, and it is wonderful how he has raised himself above his needy surroundings; he was so poor that during the time when he was studying he had to exist for a whole year on nothing but bread. Consequently, his position was one of great dependence; in order not to die of hunger, he had to bow and scrape most humbly before several professors who were not half

as capable as he was himself, and had to do their troublesome work for them. . . . Even to-day he has been bewailing his fate again and complaining how dependent is the position of a poor privatdocent. When I left him to-day, he made me a present of two of his latest short essays on the anatomy and histology of a certain fish (*Polypterus bichir*) and of a plant louse (*Coccus hesperidum*) as, also, before my departure he had already presented me with the description of a dainty parasitic crab (*Doridicola agilis*) recently discovered by him. I hope to become more intimately acquainted with this nice man and to learn a great deal from him. . . .

37. WÜRZBURG, *1. 11. 1853.*

MY DEAR LITTLE MARRIED PEOPLE,

. . . My new apartment (No. 137 in District II) pleases me very much. I must admit that it is somewhat small, but nevertheless I have been able to get all my things into it, and have even been able to keep another box down as well. In order to give you an exact description of it, I inclose the plan of the complete arrangement of the furniture, from which you can see how nice, comfortable and small my present nest is. I am especially pleased that the dear warm sun, almost throughout the day from 9 o'clock in the morning till 3 o'clock in the afternoon, shines with its brightest beams into both of my windows, unhindered by the opposite

house, which is altogether small and stands some distance away. In contrast to this, in the last dull and dark hole in which I actually fell into a fit of melancholy, I have not seen the blessed sun even for one hour throughout the whole of the summer. Also for my microscopy I have a very good light now. My microscope has produced a gigantic effect here and I have to produce it before all the world. Naturally I am duly envied for it. But most of them think that if they would have had to live for a whole term as much like a dog as I have done, in order by those means to save up for a microscope of such value, they would rather have abandoned the attempt! . . .

38. WÜRZBURG, *5. 11. 1853.*

MY DEAREST LITTLE COUPLE,

. . . In general, the people of Würzburg are very much upset that there are so few "Herren Doctors" here this term, scarcely half as many as during the last term, not even 300 medical students! The reason for this is that the two chief positions in the Julius Hospital, the professorships of therapeutics and surgery, and the clinics connected therewith, are still held by old, rather unsuitable persons, the stone-blind Marcus and the childish Textor, who now at last ought to be entirely superseded. But now, after all, they are going to remain, because Dietrich, of Erlangen, and Ried, of Jena, have declined the positions. For this reason people are

only coming here now to hear Virchow (who is really unique and isolated in his way) and, perhaps, also Kölliker, but not at all on account of the badly filled positions in the Julius Hospital, which formerly attracted most of them. Very few of my acquaintances, for instance, Bertheau, Zerroni, etc., have returned. On the other hand, I have rather a close and agreeable associate in Hein, together with whom I followed all the courses and near to whom I usually sit, as well as in the elder Arnold von Franqué; besides these I have many other superficial acquaintances. A real intimate, however, for whom I long so much and whom I miss so much, I am still absolutely without, and probably I shall never find him. Franqué has made a splendid journey in the Tyrol, and with his stories about it has so reawakened in me a restless desire to travel and a longing for the Alps, which was stirring in me so much during the whole of the holidays, that in my foolishness I made up my mind that whatever might happen I must see the Alps next autumn, before I return forever to northern Germany, even if it would only be, as Moses saw the Promised Land, from a distance! . . .

It will be some time now before I can go on with my collection of mosses. I shall scarcely have time for the many courses. Several have already begun this week; the bulk of them, that is to say, the most terrible (namely special pathology, *materia medica* and obstetrics) do not commence before

next Monday, when I shall begin to work practically in the chemical laboratory with Scherer, that is to say, to boil, to burn my clothes, to macerate, to combust, etc. . . .

Be heartily embraced and kissed by your faithful, thankful brother ERNST.

39. WÜRZBURG, *Wednesday, 16. 11. 1853.*

MY DEAREST FATHER,

According to the desire of mother, who likes to read all I write and who wrote to me asking me to send all letters addressed to you at Berlin *via* Ziegenrück, you will not get your birthday letter this year direct from here. This is now the third time that I cannot personally take part in this chief festivity of the Haeckel family, that I cannot tell you, my dearest father, with a kiss and a pressure of the hand, all that I bear toward you in heart and mind and which no words could possibly express in an adequate manner. But even under the present circumstances I think I need not waste words on the fervent and faithfully filial feelings of the most cordial love of a child, which I have for you and which just on your birthday, it being our highest and most joyful festival, are increased to a special degree of heartiness. You yourself know how intimately I have become intertwined with you, my dearest parents, with my dear brother and sister, and with our entire precious family life; indeed, how I, perhaps too reserved and retiring, find my highest

happiness in being together with you! And I have always to experience the same pain at the time of every new parting hour. I had hoped that homesickness would gradually disappear altogether. But ever and ever again when I have left the intimate and homely family circle I feel so sore at heart, I evince such a childish and senseless fear and timidity of the outer world around me, that I have often to feel ashamed of it myself. Thus even now, after these blissful, serene hours of joy which I passed with you in blessed quietness, I am obliged to think back, only too longingly, of that Elysium, although the disturbance and distraction of the new division of my time scarcely allow me for a moment to be conscious of my loneliness. Oh, how beautiful is family life! There is nothing on earth to take its place! I have thoroughly observed this also in my dear happy brother, concerning whose happiness (and that of the coming one as well) I am in reality more rejoiced than I could be about my own. What a tremendous joy it must be for you still to become a happy grandfather; I must particularly congratulate you upon this on your birthday, and with all my heart I wish that in your old age you may experience happiness in your grandchildren, and that you may remain youthfully fresh and a cheerful head of the family, to the joy of your children as well as of your grandchildren, for a long time to come. The only painful feeling (which also often causes me very bitter and gloomy thoughts) I have

when I utter this wish that you may still have joy in your children, is, my dear father, that I myself have hitherto given you so little hope and joy, and that I seem to be all the less successful the more pains and trouble I take to make you happy. You can feel assured, and you know already, that it is my most sincere and constant endeavor to become a capable and worthy man. But the more eagerly I incline with all my heart and soul to that, the less can I see any prospect of success. It is exactly in this most important point, in the construction and realization of my entire plan of life, that I still remain as helpless and undecided as ever. It is now, as you will remember, just a year ago that I explained to you in a long letter, at the first disinclination which my insight into the study of medicine caused me, the impossibility of my becoming a doctor and of my studying medicine. At that time you tried to calm me by giving me reasons which, to some extent, may even have been quite justified, and the effect of that lasted well over the summer while I became more engaged in pure natural science. I had the distinct intention to carry through the study of it, difficult as it might have been for me. But now, dear father, although for quite different reasons, I stand in the same position as I did a year ago. The simple reason now is, that when I begin to get a deeper insight into the knowledge and conduct of practical medicine I commence to understand the true character of this noble art.

At first I willingly admitted that it was an outward disgust, caused by irritable weakness of my nerves, that made me regard that side of medical life in such a gloomy light. This has now to the greatest extent been overcome and, perhaps, in the course of time would yet gradually decrease, although I believe that I shall never be able to overcome an unconquerable aversion to many appearances of disease.

But it is quite another cause now that reveals to me with full certitude the impossibility that I can practice as a medical man. It is the immense imperfection, unreliability and uncertainty of the entire medical science that makes it appear to me to be almost incredible at the present time (I might, however, be too prejudiced) that a conscientious man, who at all times calls himself to the strictest account, can torment his fellow creatures and experiment upon them, so to say, blindly, so that in a hundred cases one effect is produced and in a hundred others of a similar kind the result is exactly the reverse. In this regard medicine is diametrically opposed to mathematics. In the latter everything is restricted to definite, unalterable formulæ that can admit of no exception; in the former there is nothing at all approaching to this; everybody acts according to his own judgment; one holds this opinion, another that; here, perhaps, the patient dies under the hand of a scientifically and highly trained physician, while there another is cured by

a quack. I now ask you: Must not such a doctor, at every moment, when he considers his duty and his act, come into serious conflict, into painful doubt, with himself?

When I discuss this with my acquaintances here, they laugh at me! When I ask what they mean by that, they reply that I am only fit to create natural families of plants, and to make microscopic studies of mosses or minister to the diseases of infusoria. They, too, seem to be united in agreeing with the opinion that I am fit for anything rather than to become a doctor. I find that it has been a great disadvantage to me from my youth up that I have not listened to medical conversations, in a word, that I have not grown accustomed, to some extent, to live in this whole sphere, which has been the case with most of my other acquaintances, at least with all who are medical students, even if they have acquired this medical apprehension and reasoning faculty only in the tavern. From the fact that I have no knowledge at all of many of the expressions which are in everybody's mouth here and which the others understand, even though they have not followed the pathological lectures, and that I am totally unfamiliar with the most common medical phrases, etc., a great part of the Virchow lectures, for example, is lost to me. When I ask others to tell me something about these matters, they say that, in any case, it would be of no use to me; at best, I could become a professor; I am not

fit for anything respectable, etc. Others, at least, are somewhat more sincere, and say: "For you to want to become a professor is about the same thing as a little boy wanting to become a king." At the same time, I never speak of "becoming a professor" and even do not think of such a thing. Only, not a physician! I would rather teach the small boys in a ragged school "twice one are two." In any event, it is another question as to whether I shall continue the study of medicine that I have begun, even in spite of the prospect of my never practicing it. Since it is your desire, there is scarcely anything else left for me to do, especially as it is probably too late to make an alteration, as, for instance, in the direction of mathematics, so as to take it up as an auxiliary to natural science. If I were able to do just as I wished I would still probably do the latter, or even rather throw myself with all the strength at my disposal solely and only into the study of pure natural science, solely and only devote the whole of the time that is left to me, beyond eating, drinking, sleeping, and thinking of you, to making myself quite *ex fundamento* at home in it, and then I think that, with the greatest love and happiness and endurance I can command (which, indeed, does not mean much), I ought to arrive at something sound. The only, and, after all, the most difficult question is, whether my strength would stand it. But now, at the same time, just consider the whole field of applied medical science

in its wide expansiveness, which in the most recent times has been so immensely developed and enlarged that in four years most men can only obtain quite a superficial survey of it; consider the incredible quantity of barbaric means, forms, etc., the masses of incomplete, half-useless, half-doubtful empiric material, which in themselves require nearly a whole retentive power of their own—really, when I think that in this whole immense, confused rubbish heap, which, in addition, particularly possesses for me so much that is disgusting and repulsive, for the assimilation of which half a lifetime is necessary, when I consider that I must make this entire disorderly chaos altogether my own, my senses grow confused —and all that for what purpose? For nothing, and, again, for nothing!! Of what use will this ever be to me? If only the prospect of some day making great journeys as a naturalist were open to me, then there would still be some sense in it, but as it is!? It is a pity, a pity, that I cannot explain to you this and many another thing by word of mouth, for this matter can only be half represented and so unsatisfactorily in writing!

Now, dearest father, before everything else a heartfelt request. Do not be in the slightest degree vexed or troubled because I have revealed all my feelings and thoughts about this highly important subject quite openly and unreservedly to you. I think it better that I should lay my opinions quite straightforwardly before you, although they can-

not make you happy (which I regret infinitely and which pains me), than that from the beginning I should conceal them from you and that later on I should suddenly disclose others to you. If you still think it the best thing for me to do, I shall continue to study medicine with all possible diligence (although without enjoyment or any prospect of success). I must protect myself against any responsibility and any reproach at some later time if this should turn out to be to my decided disadvantage. Moreover, you can see that I put forward every endeavor to make the best use of my time, from the following time-table of lectures (reckoned in hours for the week): from 8–10 dissecting (12), 10–11 *materia medica* (5), 11–1 practical (!) chemical work in the laboratory (8), 1–2 dinner at the Harmony (at your express command; although the food is expensive [21 kr.] it is very good, and I do such good justice to it that my friends say that the landlord does not make a kreuzer profit out of me), 2–3 physiological chemistry (2), 3–4 general pathology and therapeutics, with special reference to pathological anatomy, with Virchow (5), 4–5 theoretical obstetrics, with Scanzoni (the first German obstetrician) (5), from 5–6 is the only spare hour I have in the day; from 6–8 I have still a microscopical lecture with Kölliker on Fridays and Saturdays, in the examination of normal animal tissues, which, although in itself of the highest interest, very especially so to myself, is, however, less so

for the reason that I have already prepared nearly all the things myself for my own microscope. The instruction is carried on without any systematic rule and order: I shall not derive much that is new from it. All these courses together cost only 78 fl. Of this amount, 25 for the laboratory alone, 15 for the preparation of the arteries, 12 for the microscopical course, etc. About the individual ones I shall still write to you in detail later on. The lecture by Scherer (one of the most celebrated organic chemists) on medical chemistry, in which he traces back the most incredible physiological and pathological processes in the life of the human body to inorganic chemical laws, is very clever. The *materia medica* or science of pharmacy (the only, and the first, course which I systematically skip, because it is too bad), I am following with a certain Rinecker, a complete and perfect dancing puppet, a clown, a charlatan, or whatever else you would care to call him, but, in addition, he is a frightful and often quite senseless chatterbox, an unpleasant and argumentative fellow, accompanying his awful lectures with the most grotesque declamatory action. The only good thing about the course is that it succeeds in the very first lecture absolutely to drive out of the future doctor every rose-tinted illusion which he might still be fostering with respect to his adopted profession as a Messiah of suffering mankind, with respect to medicine or the healing art. Immediately at the very beginning of the lecture Herr R. declares,

with a really astounding and ridiculous naïveté and sincerity, that none of us need imagine that the task of the doctors, or their calling as such, is to diminish and eradicate the number of diseases. On the contrary, the higher medical science advances rationally, the more do they increase and multiply. The entire treatment of sick people is, in reality, nothing more than a mere unsystematic experimentalization, an irrational grappling with the human organism, a useless, or, at least, a very doubtful submitting of questions to proof, a guessing this way and that, etc. "If it does not succeed by these means, perhaps it will by others!" etc. Together with this he relates the most gruesome ribaldries and stories of how young doctors who have not yet come quite into the swing have, by carelessly dosing their patients, made healthy people sick and miserable; in short, both my heart and conscience are moved when I think of it. You can well believe that such a lecture is perfectly adapted to drive away every inclination for medicine even from one who has a stronger desire for it than I have. Many a new light has been thrown upon the subject for me through this. Now at least, I can understand how it is that most doctors have such a greater preference, on account of its material certainty, for surgery, which was originally for me the most terrible of all, than for this unsystematic toying with human life. And it was exactly from this *materia medica*, the means of healing,

that I had hoped the most in my practice as a doctor!!

The chief course during this term is that in general pathological anatomy with Virchow, for which reason alone (except for the dissection) I have remained here. This course is so unique of its kind that it is impossible for me to give you a complete picture of it yet. For the moment, therefore, I shall only refer to it superficially. The course treats subjects, for the greater part, which have not yet even been printed, and which have only recently been discovered by Virchow himself. For this reason, the rush for it is quite extraordinary. The very large amphitheatrical lecture hall, containing over a hundred seats, is completely filled. While the other courses are usually shirked from time to time, here everybody tries, as far as he possibly can do so, not to miss a single lecture, because he can hear things which can neither be heard nor read elsewhere. But, although nearly all the medical students at present here diligently follow the course, I will boldly maintain that scarcely a tenth part of them can appreciably understand it. At least, this can be said of the transcendent philosophical introduction which he delivered, and which treats the phenomena of life, of sickness and of death. Although difficult, Virchow's delivery is extraordinarily fine; I have never yet come across such crisp terseness, such compact strength, such close consistency, such sharp logic, and yet withal

such remarkably clear descriptions and attractive animation in the delivery so intimately united as here. But, on the other hand, it is also very difficult, if one does not follow it with the most strained attention and if one does not possess a good philosophical and general preparatory education, to understand him thoroughly and to keep hold of the red thread that runs so wonderfully through it all; a clear understanding is, in particular, rendered very much more difficult by a mass of dark, high-sounding expressions, of learned allusions, by a too frequent employment of foreign words which are often superfluous, etc. Most of my fellow students only contemplate this miracle, motionless and overcome; it must be admitted that from such an abundance of wealth there falls off a morsel for everyone, but how many gems are lost! For myself, I can only succeed through the greatest effort and by a method of classifying, digesting, and afterward, to some extent, assimilating that which I have taken down word for word during the lecture, practically with stenographic haste (so that my hand becomes quite cramped), but written mechanically and without consideration. As soon as I reach home at 5 o'clock after the lecture, I sit down and try with all the tension of mental force of which I am capable, by diligent thinking out and working out of the matter I have received, to acquire for myself an understanding of and a familiarity with this abundance of deep thought.

In any case, this involves the expenditure of much labor and time; I have never finished with one lecture in less than from 3 to 4 hours, and often I ruminate and digest it the whole evening through, till 11 o'clock. But then I appreciate the evident advantage of this. Moreover, it seems that it was only the beginning that had been so infinitely difficult. Now, since he has entered more into the particular details, especially into the microscopical examination of the changes undergone by the tissues of the body through disease, he becomes far more agreeable and more easily to be understood than in the introduction which, in reality, is thoroughly philosophical, but full of thought, dealing with the character of life, disease and death, and which, although I am not quite in agreement with him, interested me immensely. Virchow is a thoroughly matter-of-fact man, a rationalist and materialist; he contemplates life as the sum of the functions of the individual organs, differing from one another materially, chemically and anatomically. According to this, the entire living body is divided into a number of individual seats of life, the specific activities of which are dependent upon the nature of their elementary parts, therefore, in the last instance, upon the cells of which the entire body is composed. Thus, mental activity is the inherent quality of the living nerve cell, motion the result of the construction of the muscular fiber cell, etc. Their healthy vital activity is, therefore, unal-

terably connected with the normal physical and chemical nature of these most minute microscopic elements of form. With it it stands or falls. It is the vital force, which proceeds from these cells as independent but most simple beings, which awakens to activity the dead, or rather latent, forces of matter, the slumbering forces of the finest material particles, the molecules, takes them, so to say, into its service, in order to build up the organism. Life, therefore, is the result of the individual forces of the cells and the forces of the molecules allied to them, etc.

How sorry I am that I cannot communicate and completely expound to you all of Virchow's views which he exposes with such great intellectuality. But this is impossible in writing. After all, you will find this thoroughly materialistic conception rather generally in circulation among the first naturalists of Germany. I was exceedingly interested in it by reason of the sharpness and clearness with which I learned to recognize it through and through, and, although I cannot share in detail all its consequences, I was startled by the consistency with which all the conclusions were reached. Moreover, Virchow did not express himself in detail about the chief point of all, namely the relation of the soul to this organized complex whole of independent seats of life which are bound to matter. However, I shall not have lost much thereby. According to his manner of contemplating life and

death, certainly one cannot up till now say anything about the soul. He defines death as "the return of the chemical elements, which in the composition of the organism have become united into the most complicated, the most complex, and the finest and sublimest aggregations of atoms, to their extremely simple binary compounds of inorganic matter (water, carbonic acid, ammonia, etc.)" As a matter of fact, this rationalistic, materialistic conception of all the apparitions of life has emanated altogether from the whole character of Virchow. Everywhere, in all his works and words, you confront with clear and biting sharpness the absolutely matter-of-fact man: strong contempt and highly refined derision for all those who think differently from him, religious rationalism or, even still more, political radicalism, etc. (as is well known, Virchow was formerly banished from Berlin, whither he wished very much to go, on account of his radical views in politics!), and, in addition, extraordinary firmness of character. Often, with his clear, logical sharpness, with his fine but caustic wit, with his high self-consciousness, he reminds me very much of Hiecke. In the development of his subject he very nearly excels him.

I was exceedingly pleased with the definition of disease presented by Virchow in his introduction. He contemplates all pathological symptoms not absolutely as specifically or qualitatively, but rather only as quantitatively, differing from those of a nor-

mal physiological character. The extraordinary, apparently abnormal, thing (lying *præter naturum*) about the former consists either in the fact that normal events increase and multiply excessively or in the fact that a formation appears in another part of the body and at another time than, in reality, it should do if it were normal. Everything that is pathological, diseased, is consequently by no means something special, peculiar, but rather merely an excess, something exceeding the boundaries of the ordinary and of the normal, the heterotopy and the heterochrony of it. I am particularly fascinated by this conception, because hitherto I have believed exactly the opposite, that is to say, I have regarded diseases as being quite abnormal, existing in themselves, as specially hostile forces, from which my excessive disgust and aversion for them is in part derived. But, according to Virchow's convincing arguments, they are by no means that. There are no peculiar forces governing them, the external symptoms of disease are rather nothing but the manifestations of normal vitality, which it practices as a reaction against the external contributing causes of disease (*noxæ*) affecting it exteriorly, opposing it. Moreover, in any case, you must not think that thereby I have had even the slightest atom more of an inclination to occupy myself with it or that I should now be more reconciled to the idea of disease. I must protest most vigorously against that. In fact, the splendid Virchow lectures

will only very slightly contribute to that, as they deal scarcely at all with the diseases themselves, but only with the chemical and physical changes, more particularly (and this has always been for me the most interesting subject) with the histological, microscopical changes of form which the tissues of the human body and their elements suffer through the general contributing causes of disease, as, for instance, inflammation, etc. Thus the course will become very interesting from the point of view of natural science, but absolutely not at all from that of medicine, because Virchow is certainly no physician nor a friend of physicians and their practice, but only a very capable natural philosopher, chemist, anatomist, microscopist, etc.

In addition to this course, unique in its way so that it is well worth my while to remain here for the whole term solely on that account, the chief work that takes up my time is practical anatomy and chemistry. I have now taken a very considerable liking for dissection, because I have only just begun to work on the more delicate subjects preserved in spirits, namely the arteries, veins, and nerves. Hitherto I had only prepared muscles, intestines, and so forth, which are rather coarse and tedious. These fine proportions of the structure of the human body, which, through the all-high wisdom with which they are joined and united into and through one another, not only excite the greatest admiration, but, on the other hand, are

highly interesting. Likewise, the absolutely exact and careful preparation of them is the only means by which to gain a topographical knowledge of the frame of the body, which is the most important thing of all. Therefore, I am now pulling myself together very much in order to overcome my fickleness and impatience, and have also (it must be admitted with the expenditure of much time—two hours daily during the last fortnight) been able to produce, with patience and care, contrary to my own expectation, such a beautiful preparation of an arm that my acquaintances have been as much astonished at it as I am myself, and Kölliker said: "You seem to follow the nerves into their finest fibers" (which one can only see with a three-hundredfold magnification). Not a single nerve, not one artery, is cut through, and the whole is so clearly arranged that I am half inclined to preserve it in spirits as a souvenir. Besides that I have had a special surprise in doing it. That is to say, there is a very peculiar variation in the hand which Kölliker himself had never come across (the *ramus dorsalis nervi ulnaris* is altogether missing and is completely replaced by the *ramus superficialis nervi radialis*, which runs across the hand and furnishes all the five fingers. At the same time the *Vena basilica* does not run across the hand and is replaced by the *Vena cephalica*). In this way I am now getting an exact knowledge of the human body, such as cannot be obtained through any lecture or

any book, and for me, as a natural philosopher, it is of the highest interest, although I do not desire in any way to make practical use of it as a surgeon does, etc. Besides that, it trains the hand to be more skillful.

The chemical work in Scherer's laboratory also gives me a great deal of satisfaction. Up till now I have only analyzed inorganic matter. I mix and mingle, I splash and puddle, I ignite and spark to my heart's delight. As a chemical overall your old overcoat, which I had taken with me, has come into honorable use again. In chemistry also one can learn but little from books; one must penetrate into it by experiments and analyses, if one wants fully to grasp the true connection of this strange science. You can well imagine yourself that, considering the quantity of the material to be mastered, which occupies me literally from 8 in the morning till 8 in the evening, I can find no time for any other occupations, even for my favorite studies, drawing, microscopy, painting, botanizing, etc. In any case, the evening that follows such a day crammed with muddle and medley is then taken up with the working out of the Virchow lectures, so that, as a matter of fact, I am suffering more than ever from such a shortage of time that I am quite bewildered, and at night, when, after 11 o'clock, I come to myself again, I have scarcely the leisure to ask myself what I have been doing all day long. However, it is just this continuous and

strenuous occupation that has its advantages. Thus, for instance, it compels me to divert my attention for once to totally different subjects, it preserves me from too precise pondering and meditating upon myself and my future, which is really fruitless, and likewise it protects me, at all events to some extent, from hypochondria, for which, for the reason that I have begin to turn my attention to diseases, I have now a greater inclination than ever, and about which my acquaintances are often seriously grumbling at me. Thus, for instance, recently in the propædeutic clinic, this *studiosus* Haeckel was quoted by a student, in answer to a question put by the professor, as an example of a superhypochondriac! . . .

40. WÜRZBURG, *Sunday, 4. 12. 1853.*

MY DEAREST MOTHER,

I am utilizing the first light of dawn on this Sunday morning so that I may answer immediately your dear, longingly expected letter, which I received last evening. I would have written to you in any case to-day, even if it had not arrived, because I had determined that this should be the last day till which I would wait before writing, ever living in the happy hope that an "announcement of a birth" would burst upon me. As I see from your letter of yesterday the dear little thing, or rather mite, keeps us waiting for a long time, and appears even now not to be expected to arrive

yet. I have till now thought every day a hundred and x times in vain: "Surely to-day in the Bergschloss at Ziegenrück my first nephew will see the light of the world!" And likewise in every recreation hour last week I ran home from the Anatomy School in the hope that I might possibly find the happy tidings of the long-expected appearance of the son and heir of the Haeckel family. Well, the long waiting, although surely somewhat trying for the impatient one, does not matter if the little munkle (homunculus), who has allowed us to wait for him for such a long time, will only become a fit, firm, and manly boy (which, unfortunately, his uncle is not always!). I always console myself with the saying: "Slow and steady wins the race!" I have already dreamed several times very vividly of my darling little nephew, once having seen him, fully life-size, standing in the flesh before me, in the act of studying the theory of cells with my treasure (that is my microscope), and I believed I could discern in his features the unmistakable capacity of becoming a great naturalist (which, indeed, let us hope he will become); at another time the conceptions in the dream mingled in a very comical manner: namely, my present chemical occupations in the laboratory were confused with a passage from the second part of "Faust," wherein Wagner (if I am not mistaken) tries to create a homunculus artificially by all kinds of chemical operations (boiling, distilling, filtering,

mixing, etc.). The fantastic god of dream, bringing these and several other reminiscences together in my brain, mingled them so thoroughly that thereby he created a really funny and comical picture—that is to say, I saw myself in a dream in Scherer's *Laboratorio* actively and successfully occupied in creating, by chemical operations and with the aid of carbonic and phosphoric calcareous earth and magnesia, out of chloride and sulphate of sodium, etc., out of fibrine and albumen, casein and glue, etc., an artificial homunculus, who finally, as the result of all kinds of precipitations, distillations, crystallizations, etc., stood before me, dipurated and rectified, as my darling nephew, and smiled at me very sweetly with his infantile eyes. All this I dreamed so vividly that when I awoke the next morning I really believed that my nephew had already arrived and that I would receive the tidings to-day! I write all this humbug, which has greatly amused me, just to let you see that I am not only in thought every hour of the day, but also in dream with you, my dear ones, and that I hold you always in my heart and mind. Now I wish that the first dream might very speedily and happily be fulfilled, and that we shall be made glad by the birth of a little Haeckelius, who shall become a clever man, a genial naturalist, and a happy traveler (naturally, not omitting that he shall possess a most excellent disposition!) . . . .

Now, on the whole, I am really living somewhat

like the Wandering Jew: "No rest for me by day or night, naught that can afford delight"—except, perhaps, the chemical laboratory, where practical chemistry (as well now as "higher dissecting") affords me exceedingly great joy, and perhaps also the course of microscopy with Kölliker. The latter I must admit I could, apart from some precious preparations which I do not possess, give myself just as well as, or better than to follow it there. Indeed, it is really a course I take more out of regard for Kölliker or for politeness' sake. . . .

This general want of time does not permit me, for another thing, to pursue and ponder upon the magnificent ideas which interest me so very particularly and which the chief quack, charlatan and dancing puppet, Professor Dr. Rinecker, expresses in his course (*materia medica*) on the subject of the noble art of healing, in general and in particular, although they are remarkably well suited to increase my love for medical practice to an infinite extent and, as such, would be very useful. This noble philanthropist begins nearly every lecture with an apostrophe somewhat as follows, and which was taken down almost literally: "Gentlemen, to-day we come to the constitutional employment of mercury! Here, as everywhere else in pharmacology, we are in absolute need of special prescriptions and of certain experiences regarding its employment, its use and its beneficial effect. In general, every doctor makes his own rules for himself, and it is only

on his patients that he discovers how much of this or that he can give without exactly aggravating the disease to an extent sufficient to cause death. Yes, gentlemen, therein lies the beauty and the attraction of the medical art, whereby we see that it is absolutely lacking in a fixed standard that is applicable to all cases in general, that there is no rule or order, that every doctor can treat and ruin his patients just as it pleases him. If there were a *corpus materiale medicinæ* (analogous to the *corpus juris*), according to which every doctor could infallibly cure his patients, then, in the name of Heaven, I would not care to become a doctor for anything in the world; that would be very tedious, and, perhaps, the diseases or rather the noble guild of doctors, because in that case every patient, with such general prescriptions near at hand, could heal himself, would, after all, altogether disappear! But, as it is now! How grand it is! No doctor can call another to account, because there are never two or three united in their opinion as to any particular treatment, but each prescribes on his own authority. The one prescribes this, the other that! One writes prescriptions a yard long which look like something important and which, in the best case, can do no harm, and when in the end the patient, in spite of the druggist, has been restored to health through the force of his own nature—who derives the honor and profit therefrom?—the doctor alone who, after all, generally knows nothing about the disease he

has to treat, nor what he shall do for it, etc.; therefore is not the art of medicine a beautiful science?!"

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Sunday evening.

The notes of exclamation and interrogation at the end of the last letter, dear mother, threw me into such a state of meditation yesterday as to what they really might and could mean, that at last I relapsed into my general condition of misery regarding the study of medicine, and about which I will say no more, because it is rather a worn-out and sad subject (but, unfortunately, a true one) and because it would not lead to any satisfactory result. In order to distract myself to some extent I returned to my treasured microscope and have made great use of it again to-day to my heart's content. It is, indeed, too wonderful a thing! . . .

On Saturday a fortnight ago my acquaintances dragged me *nolens volens* to the great Harmony ball (in honor of His Majesty's birthday)! What an absolutely passive, mournful figure I cut there you can well imagine; luckily enough, I was lost in a great crowd and among the other students, nearly all of whom were there. As a matter of fact, I was merely an onlooker in the very beautiful hall that was hitherto unknown to me, and I amused myself at the expense of the people who were quite dancing

mad, especially the students, who flirted terribly with the ladies (young and old), cutting out all the other menfolk, such as, for instance, the officers (who occupy a far lower position here), officials, budding lawyers, etc., and keeping them all to themselves. But there is nothing in the world that looks funnier and madder when you shut your ears so that you cannot hear the music than a dance, when you only see the people jumping about in regular time as though possessed by demons. I made this experiment with the most complete success and was greatly amused for quite a long time at the comical figures as they hopped about. Otherwise, the ball so little pleased me that I have had enough of that sort of thing to last me for a long time, and I shall certainly not take a subscription for the Harmony, which at first I was inclined to do for this term on account of the numerous (a few hundred) newspapers and periodicals which are to be read there. That kind of reading, after all, takes up too much time. . . .

41. WÜRZBURG, *Saturday, 10. 12. 1853.*

DARLING MOTHER,

I cannot possibly allow the heartiest congratulations I am sending to my dear married couple immediately after the receipt of the joyful and endlessly longed-for news of the birth of my nephew (which, on account of the carelessness of the local postal service here, I only received this evening),

to go without greeting you also in your new beautiful dignity of "grandmother." The whole of the titles in Haeckeldom will now suddenly be changed. As an uncle I feel myself now suddenly to have become so old and reasonable that I would really be capable of forming the good resolution to behave myself from to-day henceforward like a real man. . . .

42. WÜRZBURG, *21. 12. 1853.*

DEAR FATHER,

. . . In addition to much other work which I had set apart for the Christmas celebration, I shall now avail myself also of Kölliker's offer to carry on my mic oscopy in his room, by which means one gathers very much material. At present there are several Englishmen here (young Dr. med.) who do nothing all day long but sit in Kölliker's room in the School of Anatomy and study microscopical anatomy. Through this they have the advantage that all the material that they can possibly need or wish for in any way is directly at their disposal, and that they can immediately ask Kölliker, he being the greatest histologist, for advice and information on every point about which they are in any kind of doubt. You can imagine how terribly I envy these people, and I ventured to express this fact to Kölliker when I was doing some microscopy with him in his room last Sunday morning, and while I was making a drawing of a microscopical

preparation (a transverse section through the *Nervus opticus*). Thereupon he replied that this opportunity is equally offered to myself. If only I had the time I might always come here. It is certain that one can only absorb this branch of natural history (the histology of men and animals) *ex fundamento* (as, indeed, all others) if one occupies oneself (as these Englishmen also do) solely and uninterruptedly with it for a length of time (for about a term). Therefore, I have now conceived the bold idea of accepting his kind offer and of pursuing nothing but microscopic anatomy, not only through the next Christmas and Easter vacations, but throughout the whole of next summer, and, at the utmost, concurrently with it chemistry and pathological anatomy with Virchow (which, for the greatest part, is also treated microscopically); what do you think of this proposal? By these means I would at least arrive at something satisfactory in one individual branch and, in any case, in addition to the immense pleasure, would derive the greatest profit. I believe that it is one of my chief mistakes in the time-table of my work that I take up too many subjects at the same time and that I am trying to grasp, at once and thoroughly, all possible branches. At least, thereby I would for once escape this reproach. . . .

Now I leave home every morning at 8 o'clock and do not return before 5 o'clock in the evening (when I have a lecture with Kölliker, even as late

as 8 o'clock), an arrangement (although I wish I had several spare hours a day) that suits me quite well, because I am generally feeling so lonely at home, except when I am sitting with my treasure (*i.e.*, my divine microscope) or when I am writing letters to you. I spend the evenings in working up Virchow's brilliant lecture, which is no longer the difficult task it was at the beginning. If I were to pretend that I took any interest in the subject, in all the different pathological new formations, swellings, degenerations, etc., I would be perverting the truth. But, making allowances for an appreciable disgust for it, it is not so bad. Why should one entertain such a disgust and abhorrence for an abscess or a festering sore when one hears that this terrible morbid formation is merely based on the formation and augmentation of cells in a liquid *blastema*, which in itself is really a highly interesting thing, as, indeed, is the entire life of cells. Yes, in my opinion, there is nothing more interesting than the theory of cells! I do not know what peculiar power of attraction there is specially for me in the strange fact that the cell is the origin and a component part of all organic bodies; but the fact remains that I consider this actually to be the greatest miracle of creation, about which I am more astounded and pleased than I can adequately express. In reality, this genesis of cells is something that closely concerns everybody, for, all of us, like plants and animals, consist of and have our origin

in cells. The egg is nothing but a single cell. How inconceivably deadened and indifferent most people are in regard to this marvelous fact, the miracle of miracles. To me it is the most attractive of all, and I would like to dedicate all my strength to the study and exploration of the cell. Perhaps this inclination seems to be altogether too bold, but when I feel that I have some confidence in myself in one direction, whatever it might be, a secret dark instinct tells me: "This field is the only one in which you can achieve something!" It is this same instinct that ever attracted me so extraordinarily and so extravagantly to microscopical studies, that makes me feel that microscopic work gives me the highest happiness and delight. And, strangely enough, it is this very microscopical anatomy, histology, or whatever you may care to call it, that most medical men abhor as an unpleasant, difficult, and fruitless, although necessary, discipline, and are glad when they are rid of the lectures concerning these subjects and have seen in a practical manner, to some extent, what the little things look like. And the strangest thing of all is that they believe it to be a severe discipline; but this does not occur to me at all, for it seems to me to be at one and the same time the most agreeable and the easiest thing. I do not know how it happens, but, without having really ground hard hitherto at microscopical anatomy and without having read Kölliker's classic book once through, I know, nevertheless, the prin-

cipal things in it as though they had been born in me and as though I had learned them in the nursery. It is strange, but true! In spite of my great clumsiness which also here in the delicate preparations often annoys me very much, nothing, on the whole, appears to me to be easier and more pleasant than microscopy, while the others groan and sigh under it. No, nothing can be greater to me than my cells! Do not take what I say, dear father, to be vanity or haughtiness! When I think it over quietly and calmly at other hours, I must admit that this entire sanguine hope that I may be able to do something as a microscopist (whether it be one of plants or animals; personally I believe of the latter) appears to me to be foolish presumption. For, how many of the most capable men are occupied in this magnificent branch! Schwann, Schleiden, Kölliker, Virchow, Mohl, Schacht, all these owe their entire renown to this most precious of all sciences. Again, how many capable men in recent times are engaged everywhere in the most minute and most careful microscopy! When I contemplate all that they have done I come to the conclusion, after calm consideration, that I shall never be able to win a place near them; for what shall such a helpless, characterless and insignificant weakling, as unfortunately I am, who to-day is "exulting into the high heavens" and to-morrow is "grieved to death," be able to produce in comparison to and with such a number of excellent

and careful investigators! Be that as it may; now I will at least drink the chalice of this delight to the dregs and will perfect myself in every possible way in microscopy. At least I will show you that you have not made a present of this magnificent, costly microscope to one who does not know how to appreciate it. Even if I do not make any new discoveries with it, it gives me, in any case, the most blissful hours of joy, hours in which I can abandon myself entirely to a beloved object!

Now in the early morning when I look at these quickly sketched outpourings of my heart, I must again perhaps come to the conclusion that, in reality, there is nothing else underlying all this enthusiasm for the microscope and the cell but happiness and delight in this immense and miraculous world of the infinitely small, in which the great Creator has revealed his most wonderful power and wisdom, happiness and delight such as, after all, can be experienced by everybody! But take all this for what it is worth, dear father, as the breath, perhaps, of an exaggerated enthusiasm which from time to time consumes all my limbs like a devouring flame of passion, so that involuntarily my muscles suffer from tonic contractions and I break out into jubilant cries of delight, as happened, for instance, when a few days ago I came home with my Schieck in the evening at 8 o'clock after the lecture and examined a marvelous and quite transparent membranous breast muscle of a frog and

discovered in it the most beautiful nerve terminations (the most subtile and finest of objects) partly in the shape of loops, partly of fine lace. I was so delighted with this picture that I continued to study it through the microscope and draw it till midnight in the ice-cold room (through which, by the way, I caught a cold).

Such magnificent moments, in which I would like to embrace and enfold the entire noble science with my whole being and nature, and I am often blessed with such moments now, are in my dreary life real glimpses into the sun. And in opposition to that, on the following day how sad and dark the practical medical work, the treatment of the people in the clinics, etc., appear to me, and how my courage fails when I see the future approaching with so desperate a prospect. At such times the only comfort I take is in the wild idea that if the worst should come to the worst I can retire with my microscope, which I never allow out of my sight, into some forest primeval of Guiana, there to study nature to my heart's delight. Take, for example, several visits I paid to the clinic last week, when some incidents that occurred made such a violent and disgusting impression upon my irritable nervous system that for a few days I felt quite ill, and I seriously feared that I would suffer from a nervous fever, which, however, proved to be excessive hypochondria. And it is just these clinics and these terrible special pathological and therapeutical

courses that most of my acquaintances will follow next summer and which, as a matter of fact, I ought also to begin. How happy would I be if instead I could devote myself for the whole term to microscopy with Kölliker, quite alone *privatissime*. The Virchow lectures would also run quite in harmony with the latter! No, once again! Nothing surpasses for me the theory of the cells and the study of them!

Vivant cellulæ!! Vivat microscopia! . . .

Farewell, my dear papa, now even grandpapa, celebrate a very joyous and happy Christmas with the dear ones in No. 8, and do not when you think of the dear ones in Ziegenrück, forget

Your cordially loving old boy

ERNST H.

Uncle, Dr. phil., et med., privat docent of microscopy.

43. WÜRZBURG, *New-Year's Eve, 1853.*

MY DEAREST PARENTS,

. . . Among the many most hearty good wishes which I always cherish for you and for your welfare and very specially at the commencement of this year, the most ardent and one of the most heartfelt ones is that you may yet experience true happiness in your boy! At least you may be assured of this, that he for his part will do everything that is possibly in his power to perform his duty, and to become really worthy of you! I must confess that up till now I have given you much anxiety, and that I myself must still

regard the future with just as much anxiety. Yet, nevertheless, I feel that recently I have at least increased in courage and confidence in God, and this will surely be of assistance to me. . . .

The frontispiece to this letter shows you Ernst Haeckel in about the same attitude as he appeared to himself last night in a dream—will it really be the picture of the true future? You will surely not be a little surprised at the confusion and the strange composition of it! As far as I can make out of it, medicine is lying in a corner, hidden behind the tree. "The golden tree of life," however, is and will still remain botany!

He is exactly in his classical moment, drawing with his right hand and with the aid of his right eye that which he sees through the microscope with his left eye (shading it from the side light with his hand). Before him, besides a galvanic battery, there lie on the table a magnet, a pair of forceps, some covering glasses, chemical test-tubes, and other appliances connected with natural science. In the background to the left stands the terrible phantom of the future, a school blackboard with a mathematical formula a yard long, still to be worked out. In the foreground Berghaus's *Physical Atlas*, which is now altogether forming the whole foreground of Ernst Haeckel himself! . . .

This morning again, I heard a good sermon by the same old clergyman whom I heard on Christmas day. He applied the text "Do not be afraid,

for I am with you," to the Christian and, in particular, to the Protestant Church, to the Fatherland (under the assumption that God would not forsake it), and, finally, to the individual Christian brethren and sisters of the congregation. I am glad to say that thereby many a good resolution I had renewed has been strengthened and fortified in me, and that in my firm will I am resolved more than ever to bear myself this year with more strength of character and confidence in God, even if it should be under more unfavorable conditions than in the one that is just ended. As it was exceedingly mild and warm May weather, I went for rather a long walk alone this afternoon. I crossed the bridge and then on a somewhat high hill, situated southwest of the fortress (in the direction of Zell), I was able in the beautiful warm glow of the evening to enjoy a magnificent view over the Main valley, including the windings of the river, which stretches from the town downstream away toward the west and forms an elongated oval basin. The fortress stood high above to my right, and further down lay the Main quarter, while just in front of me there was an important ridge (on the opposite right shore), which on one side was ornamented by a dark fir wood and an old ruined castle. Quite to the left, where the important manufacturing place of Zell is lying, the stream makes a graceful bend again toward the north, and is lost in the blue distance (which is always the favorite effect for me and

which I must always contemplate for some minutes with longing in my heart) between still higher mountains. The lower part of the valley lying between it and me was already quite green with the young crops, and the trees had begun to throw out the most beautiful buds, while the hazels were already in bloom. The temperature might have been about 8 deg. Reaumur. If one had not known exactly that it was the New Year one could have believed that the landscape before one belonged to April or May. The grass is already quite green with cotyledons. The peacefulness which reigned over the entire landscape made a highly attractive impression and only from time to time was interrupted by the ringing of the convent bells. What this perpetual clanging of bells means here you cannot believe. . . .

P. S. When I asked you to send Homer to me, I meant the original in Greek, which affords me quite another pleasure than the translation. However, I am quite fond of reading it once more in that form. . . .

Hearty greetings to all friends and relations, the best to yourselves, from your old

ERNST HAECKEL.

44. WÜRZBURG, *7. 2. 1854.*

DEAR PARENTS,

. . . Now I remain at home daily till 11 o'clock and grind furiously—at botany! That is to say, for

my lecture in the little physiological circle. At first I wanted to take a part from phytogeography (concerning the influence of climate, particularly of warmth, on the distribution of plants and their geographical range), for which purpose I have read a number of small, very interesting publications which, to some extent, would very much have interested you, dear father, because some of the questions dealt with in them are of general human interest. Thus, for instance, there is a very important thought, further elaborated in modern times, that the extermination of forests which goes hand in hand with civilization has the most destructive influence, and not only threatens the existence of the people themselves who annihilate the forest, but also renders the country concerned forever uninhabitable. The examples of the Orient, of the land of origin of the ancient nations, confirm this in an emphatic manner. India (or rather Persia and Babylonia), Syria, Palestine, Egypt, Greece, etc., were the richest and most prosperous countries of antiquity. But all attempts to make these, now quite desolate and devastated areas of land, fertile and cultivable again are in vain, because the extermination of the forests has produced a totally different climate, a dry and hot atmosphere, free from moisture, in which only scanty desert plants can still continue to vegetate in the parched soil. That this is indeed so has been proved by history and by natural science. But the very simple conclusion

which we can draw from this is, that our western Europe sooner or later will share the same fate; that with every newly destroyed forest (the number of which is already considerably diminished) we are preparing for ourselves a new area of desolate country, on which, on account of the lack of moisture (which is absolutely dependent upon the forests) soon no corn will be able any longer to be grown; so that in the course of time famines, resulting in emigration on a gigantic scale to new countries (where the prolific forest verdure has not yet succumbed to the ax of civilization), will occur, and thus the mass of the civilized peoples, following the eternal migration and impetus from east to west, will gradually transplant themselves to the New World (the present powerful stream of emigration is already the beginning of it), till finally the latter will also succumb to the same fate as Europe and Asia before it.—And what then?—Yes, we must admit that no one can answer that question!

In the treatment of this vital question in connection with natural science (physical and botanical) one arrives, therefore, at the same result as that to which old Wieck, for historical and philosophical reasons, always came, namely that Europe and her hypercivilization will soon come to an end and that the current of the irresistible emigration of the nations will soon leave Europe behind it, just as deserted and as devastated as an exhausted

field, as has happened before with Asia. If I am not mistaken, at that time you always held the opposite opinion, and you will probably still do so now. I must confess, after what I have read and thought about it, that I am also more inclined to the other view (namely, that Europe, through her physical desolation, as a consequence of the extermination of her forests whereby the climate distinctly becomes much hotter, drier, more unfertile, as well as, in particular, through her moral corruption, which is always the inevitable consequence of hypercivilization, will, at least partially, in not too distant a time also be ruined). . . .

On the 28th January a young privat docent (Karl Gegenbaur) was habilitated here, and he also for comparative anatomy and histology! If only there were not far too many people attaching themselves to this beautiful branch! There is no more room left for other people, and what in the end is to become of all the private *docentibus?*

But, after all, this Doctor Gegenbaur is a very clever and skillful fellow, who can draw well, and who was with Kölliker and Müller at Messina, where he had continued to stay for more than a year in order specially to observe medusæ, polyps and other lower marine animals. His habilitation essay dealt with the metagenesis of these animals. . . .

Now, dear parents, farewell, greet all friends and relations and continue to love

Your old Ernst.

45. WÜRZBURG, *16th February, 1854. E. H.*
(Penitential sermon of a 20-year-old boy to himself)

DEAR ERNST HAECKEL,

To-day you enter upon the third decade of your terrestrial life, and on this highly important day it is your duty to throw a glance over your past existence and your future prospects, over the former in order to thank God for the infinite blessings he has showered upon you, and to feel in a spirit of repentance how little you have shown yourself worthy of them, but over the latter in order to form new resolutions henceforward to lead a better life and to confide yourself entirely to the gracious guidance of God. Your first thought on this day must be one of fervent, sincere thankfulness to God who has embellished and facilitated for you the rough path of earthly existence with so many blessings both for your body and for your soul. He has given you the most excellent, upright and loving parents, the best, truest and most honest brother and sister and relations; he has inspired you with an infinitely strong and tender instinct for the most magnificent of all sciences, for the recognition of his innumerable and miraculous works of nature, in the wonderful structure and life of the smallest as well as of the largest, in which his omnipotence and wisdom are revealed; following this deep instinct, he has endowed you with the power, the means and the capability of consecrat-

ing your whole life to the grandeur of natural science! And how have you shown yourself in return for this munificence on the part of God? Unthankful, ungrateful, faint-hearted, desperate, selfish! By your undecided, wavering conduct you have more frequently grieved than gladdened your parents, who love you so heartily and fervently; by your one-sided, egotistic and yet fickle, often puerile, unmanly, and ridiculous behavior you have repelled the friends who have desired to approach you more closely!

From now henceforth all this must be radically altered! To-day you enter the 20th[1]) year of your life and thereby become a man! A German, a Christian man! But you must prove yourself worthy of this honor. Put aside the childish, undecided, unmanly conduct; by such behavior you make yourself ridiculous and despicable. For what purpose did God give you free speech, unrestricted freedom as an individual man? Surely not in order to subject yourself everywhere weakly and miserably to the defiance and the despotism of others. Think of your father, how frankly and openly he defends the truth and the right where and when necessary. And how do you prove yourself to be worthy of this magnificent man? You are silent when you ought to speak, you tremble when you ought to shake with noble wrath; when others make vicious, unworthy speeches in your presence,

[1] 21st (?).

or do things which your conscience tells you are wrong, you are silent and subject yourself to the crowd or even you join them under compulsion in their excesses. But no such moral compunction should be allowed to exist for a free youth. Freely and unreservedly he ought to defend truth and right before the face of the lowest as well as of the highest, should not fear the threats or the vengeance of any man. Think of what Christ hath said: "He that is not with me is against me!" Or of what is written elsewhere: "Fear God, do that which is right, and be afraid of no man!" Or of what your excellent friend Reinhold Hein always tells you: "Be a man in the face of men, a child in the face of God!" Yes, try to be or to become that! Hitherto you have done the reverse, even as everything you undertake you begin badly and at the wrong end. While you showed yourself to men as a weak child, you appeared before God as a man, not as a real, humble, undefiled man, but as one who is obstinate, unthankful, sullen, full of self-justification, lacking in self-confidence, without true Christian hope and love. Herein also you must radically reform yourself!

Above all, hold fast to hope, courage, trust, the most steadfast faith in God and a right self-confidence. If often enough, only too frequently, in many dark and sorrowful hours the whole of the prospects, circumstances and confused combinations of your outward future life will appear

to you to be completely comfortless and hopeless, if with regard to your desires and all your designs you make to yourself and which you depict in all the glowing colors of aspiring youth, over and over again a disheartening and annihilating "but" rises up against you, then always consider that it is not you but God who shall unravel all these tangled skeins, and that in his miraculous loving-kindness he will surely unravel them in the most marvelous way. And if every access seems barred against you and you have nevertheless once for all to choose a definite, deliberate path, then only implore God fervently; he will not leave you, but he will guide you on the best, the most secure, and most suitable way out of this confusion. Therefore, only Hope and Faith! Think of the motto of Oliver Cromwell: "He who does not himself plan whither he will go, goes farthest!"[1] Confide in God; he will save you and guide you; you cannot obtain anything from God by sorrowing and self-torture, by vain, painful and yet so useless self-torment; it must be prayed for!

But as till now you have lacked the right, the faultless, the immovable faith, the invincible, unshakable Christian hope, so has it been with true, pure, Christian love, the love you bear toward your neighbor and toward all men; admittedly,

[1] This is not an exact literal translation of the motto, but I have adapted it to the context because I cannot find the correct reference. I believe the German text is wrong!—*G. B. G.*

you love your parents and relations in the tenderest and most fervent manner; you would be willing gladly to give all your blood and possessions for their sakes! But even the most wicked loves his own! But how does it stand in respect to your conduct toward other men whom God has likewise appointed to be your brethren in Christ? Beyond all doubt you must confess that hitherto your behavior toward them has been anything but right. Always in your conduct toward strangers a cold, selfish egoism, a loveless and reckless reserve, have been noticeable. Can you be astonished then that you cannot find a faithful and sincere friend? Cast a glance over all your actions! Do you not always think first with anxious selfishness of your own physical and moral advantage, and only afterward, or, perhaps, even not then, of others? When you are asked to contribute to the pleasures of others, to their benefit, when they invite you in the kindest manner to share their company, the smallest sacrifice of money, and, more than all else, of time is too great for you; you always think: "I can make much better and more profitable use of this time for myself! What can I do and perform in this time!" Certainly you can keep the time which you ought to dedicate to other people also quite alone for yourself and utilize it for the development of your knowledge and your mind. But remember that there is also another field of intellectual life that must be cultivated, and that

is intercourse with other people, the obligation for which God has not placed upon us without wise intention, as your excellent father so often repeats. Here also in your association and intercourse with others you train your mind in the most various and widespread directions in a manner that is quite impossible to you in your own glum study, where you can only train yourself to be a scientific man of books. It is true that you have a special propensity for loneliness, for the solitary, fervent contemplation of God's wonders in nature, in which you feel happiest and quietest. But remember that men also belong to this same nature, toward whom God, by putting us in their midst, has imposed manifold obligations upon us. Let all that avaricious, selfish conduct, which you try to persuade yourself is conscientiousness, depart from you. If you desire to remain retired within your own self you will never fulfill your mission as a Christian man toward your Christian brethren; and what will your faith appear like when one day you will stand in the presence of God, when he will demand of you the talent with which he has intrusted you and which you should have increased multifold?

Therefore let these three precious key words in the Kingdom of God, Love, Faith, Hope, be repeated to you; try to absorb them into your life and your being; do away with selfishness, faint-heartedness, with self-torture! Hold God ever before your eyes and in your heart! Pray and work! This is

implored to you from his very heart at the beginning of your 21st year by

Your better I.

46. WÜRZBURG, *17. 2. 1854.*

MY DEAR, DEAR PARENTS!

This is the first letter which you will receive from your twenty-year-old boy, henceforth a young man. Should you not at first sight consider these lines as having been written in the wise moderation of a man with a settled mind, one who has already twenty years of his life behind him, in any case for the moment you must take the good will for the deed. For, the transition from the unsettled mind to the settled mind, from folly to wisdom, and from the child to the man is, indeed, not so suddenly and so rapidly performed as one would desire and intend that it should be. But that the most serious and decided purpose, the best and most sincere will, is existing in me that I shall now solemnly and with all my strength strive to become a very capable, honest, brave man, and acquire for myself the energy and independence, the perseverance and self-reliance which is necessary to that end, you may be absolutely convinced, and in this you will not find yourself disappointed in your old boy. Indeed, there are still many and very terrible things I have to correct in myself. Before all others, I must reckon among them my wavering indecision and my helplessness, which never permit me to

make a free, independent and firm resolution regarding the hopeless and unconvincing outlook into the future which ever envisages the worst and unhappiest result of every enterprise, and paralyzes energy by depriving one of every glimmer of self-confidence. But perhaps my worst fault is the peculiar kind of selfishness which shows itself, for instance, in my intercourse with other people, *i.e.*, in my unconquerable unsociability, which has probably also been the cause of my having hitherto sought in vain for a real friend. From this, my dear parents, you will at least see that I fully recognize my weak points; indeed, how should I not do so after your true parental care, your loving endeavor to make a better and more perfect man of me—for which I can never be thankful enough to you—for you have always drawn my attention to these faults, as have also the remarks of my nearer acquaintances often enough done. Indeed, to recognize one's errors is quite another thing than to correct them. However, with God's gracious help, I believe that real improvement and perfection in true knowledge will follow, and I firmly hope that with the mighty assistance of God I might succeed gradually in overcoming these weaknesses, and in the end become a good and capable man, and still give you, my dearest beloved parents, very much and very great joy, and I pray that in this he may grant his blessing!

In the morning of the day before yesterday I

received your loving letters and presents. How much, above so many others, have I been blessed with such good, faithful parents, and what high and pure pleasures have been granted to me in my spiritual intercourse with them, of which, alas, most others are deprived. How few of all my fellows whose acquaintance I have made here have the happiness of standing in uninterrupted spiritual communion with the parental home, and of altogether growing up in it, a thing in which I can proudly take my delight. How much do these poor fellows miss! Surely, dear parents, I consider this to be absolutely the highest, and not alone terrestrial, but also eternal, gift that God had granted to me, that I have grown together with you so inseparably, strongly, and intimately, and that I cannot at all imagine free spiritual intercourse and devotion without you. I have probably cause to thank God devoutly more than a thousand times a day for the happiness of my family life, and I pray to him that he will still preserve it to me for a very, very long time! The outward material tokens of your love yesterday were scarcely necessary to cause me to rejoice and enjoy fully and deeply the magnificent treasure of your parental love. I know surely that throughout the whole of my festal day you have been with me in your heart and in your mind, as I have been with you, and that you have prayed to God with me, for me. But also let me thank you for these external tokens of love;

they have made me all the happier because they came so unexpectedly. . . .

You, dear mother, are glad that in Hein I have found a bosom friend, something for which I have been wishing for a very long time. As a matter of fact, this is only partly so. Among all my fellows I do not know one whom I love and esteem in the same measure. He is really far too dear a man, for me the true ideal of a student as he ought to be (but as I, unfortunately, am not at all)! What I particularly admire in him is that he knows how to keep within bounds in everything, in work as well as in play, in the time which he devotes to his own professional training as well as to his intercourse with other people. Although he is not exactly a specially distinguished genius (though clearly a long-headed fellow) and does not show unlimited application (which by too great effort is in itself enervating), nevertheless he learns and knows an immense amount, follows all the lectures carefully, and is always conversant with and at home in every question that is put to him. In addition to this, he enjoys his student's life with such boyish freshness, with an ever merry and open mind—an ideal I always picture to myself and which I would be only too happy to realize in myself if the thousand "buts" were not always standing in my way. . . .

In order for once to carry out my intention, I have immediately commenced the first two days of my twenty-first year very cheerfully and full of

hope; indeed, during the last few weeks I have already been altogether in an animated mood, which I owe solely to the lecture I had to deliver in our medical circle. After a long time, during which I had become rather unfaithful to botany, to other stars, particularly zoötomy, the opportunity has been afforded to me of plunging deeply once more into this magnificent favorite science, that is to say, into one of the most interesting fields hitherto almost unexplored by me, namely into the subtle study of the cryptogams. After I had given up the lecture on phytogeography I turned toward the scientific study of the fructification of these highly interesting plants, which up till now have been considerably shrouded in darkness, and it is only through the latest discoveries that quite new and highly brilliant and remarkable results have been obtained. Above all, I have been studying a completely new work by Hofmeister, which I borrowed from Schenk and which has caused me to experience the greatest admiration, astonishment and delight, on account of the new and magnificent discoveries contained in it as well as through the really unsurpassable degree of thoroughness and exactitude which is shown in the examination of the development of every individual cell, and which is quite characteristic of the indefatigable diligence of the Germans. This classical work, with its extremely minute microscopic examinations, has almost completely cost the author his eyesight, so that he is

now scarcely able to see. It is a good thing for him that he is in very good circumstances! This strange man was formerly a bookseller in Leipzig, and carried on his business during the day while he employed the night for the microscopic examination of mosses, ferns, etc., and their strange phenomena of life and propagation. Later on, he abandoned himself altogether to this magnificent branch, but thereby ruined his eyesight by the infinitely minute and fatiguing preparations. But to compensate for that, it must be admitted that he produced a classical work.

In connection with this I have also read some other beautiful and special works on botany, in particular Schacht's *Pflanzenzelle* [Plant Cell], a work that is no less excellent, which on the recommendation of A. von Humboldt was awarded the Gold Medal, and which I shall purchase for my birthday with the 5 gulden, of which you made me a present. It was a long-wished-for treasure, from which I can learn much. My best thanks for it! I am quite unable to tell you what tremendous happiness it will be for me when I shall be able some day, as I have been on this occasion, to bury myself in these treasures without being disturbed. Then in the true meaning of the word, my heart always jumps with joy within me, and I should like to jubilate aloud, but, above all, to let you yourselves share this pure, unalloyed bliss with me. Lately I have often enjoyed such happiness when

I have been looking at such precious works in the University Library (where I am daily for nearly an hour) as Humboldt's *Atlas Pittoresque*, his travels, *Vue des Cordillères*, *Novae species plantarum*, *Plantæ aequinoctiales*, etc., and then again Corda's *Prachtflora der Pilze und Schimmelbildungen*, [Luxurious flora of the mushroom and mildew growth], but, above all, one thing which I have really read greedily and of which I cannot get enough. It is this, the *Vegetationsansichten von Kittlitz*, praised very much by Humboldt on account of their fidelity to nature, comprising 24 steel engravings in atlas form, which represent landscapes of Pacific countries and of tropical lands in general, and in which the marvelous tropical vegetation is represented beautifully and charmingly; indeed, one can fall in love with it. For my part, I have actually and completely fallen in love with the splendor of the tropical plants, can only think that it would be my greatest happiness someday to enjoy them face to face, and thereby, in fact, I have become powerfully obsessed with that idea, if you care to call it so (my friends call it "sanguine madness"), which although I myself must doubt its practicability, is of infinite value to me, because in it I have again found a fixed pivot round which all my wishes for the future revolve and on which I am able to create the most magnificent multicolored castles in the air and mind-pictures. This bold wish, of the fulfillment of which I am dreaming day and night,

aims at nothing more nor less than the realization of the visions of a great journey into tropical lands which I nurtured even as a child, and which, instead of being something new, is, in reality, something quite old. But these recurrences of thought are, like all relapses, occurring with increased violence, and are now, under present circumstances, modified in a somewhat peculiar manner. Because, my reason tells me, after due meditation, as follows: "You do not possess the means to undertake such a journey at your own expense, you have neither the qualifications nor the talents to be able to make it at the cost of the State (perhaps by means of a traveling allowance), you have, finally, a sick foot, which will not allow you to undertake this journey as a walking tour—on the other hand, you are well aware that in Germany, especially as a practicing doctor, nothing will ever come of you"; in consideration of these cold thoughts, therefore, I have sketched the following startling plan (don't laugh at it!):—I shall now study all that is barely necessary of medicine to the bitter end, so that I can take my degree as a doctor, perfect myself in botany, zoölogy, microscopy, anatomy, etc., as far as possible, and then try to get a position as a ship's doctor, so as to obtain a free passage to any tropical country (to the Brazils, Madagascar, Borneo, or anywhere else), where I shall then settle down in some forest primeval with my wife (namely my inseparable microscope), and shall anatomize

and microscopize animals and plants to my heart's desire, shall collect all possible zoölogical, botanical, geographical, etc., knowledge, so that it will provide me with enough material to enable me to do something really good. A sufficient supply of food is to be found in the forest primeval (because a single little piece of land cultivated with bananas suffices for the sustenance of a single individual); if necessary, I shall earn what I require for myself by quackery as a practicing doctor (!), surgeon (!!), and obstetrician (!!!) among the Red Indians. Then when I have saturated myself with and studied sufficiently the magnificent flora and fauna of the tropics for a few years, I would try to return in the same manner, and then later on I can either get a position as a *privat docent* or somehow earn my scanty bread by scribbling!

Do not laugh, dear father, do not be afraid, dear mother, when you read this fantastic aberration. All this has not actually happened yet! For the time being I only picture this Robinson project to myself in the most beautiful colors that my imagination can conceive, because it seems to me to be the only way and means by which something can become of me, although personally I doubt the possibility of its execution. This dream, this beautiful golden castle in the air, however, satisfies my mind in every respect for the moment. It shows me a definite port toward which I must steer, it dangles before my eyes the prospective realization of my

most favorite wishes, it spurs me on to perfect myself as much as possible in my favorite sciences, finally it forces me morally to go on with the hated medicine to the bitter end. In every one of these respects, but especially in the last, this beautiful dream can be useful to me, even if nothing should ever come of it, as I am inclined to fear will be the case. At all events, there is plenty of time yet before I have definitely to decide. But I really do not see how I could succeed by any other means. Whenever I see or read something concerning this (as, for instance, yesterday when I looked with the greatest delight at the pictures of tropical landscapes and trees in the splendid work by Martius about palms), this fixed idea confronts me continually, only all the more vividly and forcibly, so that I have already lived quite into it and am quite infatuated by it. . . .

Now, dearest parents, once again the heartiest thanks for all your love, and, in particular, still to you, dearest little mother, from your faithful

ERNST H.

47. WÜRZBURG, *9. 3. 1854.*

MY DEAR, DEAR PARENTS,

. . . The truly magic relationship which, "in spite of all that has happened in the interval, the unforgotten and unforgettable paradise of childhood, the parental home, the arms of the mother" (as Schleiden expresses himself at the end of *Leben der*

Pflanze), is experienced by him who is blessed by God with good, loving, excellent parents, surpasses in reality all the other charms and blessings for which the poor weak human heart yearns. At least, this is so with me, and in gloomy hours as well as in bright ones. When I have a very great joy, as, for instance, only a few days ago when I discovered under the microscope a forest full of the most charming and delicate forms on a foul piece of sausage skin, covered with mildew, it is never quite pure and unclouded! I always think: Ah, if only you could show this to your dear elders, so that they could share your happiness! . . .

I am now suffering again from a thoroughly bad attack of homesickness, such as I have scarcely experienced through the whole of the winter. But certainly nothing can help it: the resolution to remain here during the holidays has been taken, and I must try to make it as easy as possible for myself, to which surely the amount of work, of which there will be no lack, will contribute its share. But, besides that, I am tormented, even notwithstanding the strong and deep longing which attracts me homeward, once again by indecision and uncertainty as to what I shall begin with first. The plan I have made to continue to remain here till next summer has recently been shaken, and this mainly by two causes: firstly, on the whole I am not half as satisfied with Virchow as I had expected to be, nor do I believe that his summer lectures,

which in reality are only of advantage to thoroughly enthusiastic senior medical men, will be of great advantage or profit to me. Secondly, it has also become questionable to me whether the *privatissime* in microscopy with Kölliker can be continued for a long time. In spite of all the admiration I continue to have for Kölliker's extraordinary talents and capabilities, my desire to come into closer association with him has somewhat decreased, as it seems absolutely to be the fate of all my ideals in the end to melt away in rather gloomy shadows. Besides, if I wanted to continue microscopy with Kölliker next summer, I would also be obliged, *nolens volens*, to take a *privatissimum*, in which, as a matter of fact, there is no advantage, and for which I have not the slightest inclination. In short, quite suddenly and in rather an unpleasant manner, the whole situation has become doubtful and uncertain to me. After all, it is, indeed, very sad in the stern, unsatisfactory reality of life, that one ideal after another dissolves into thin air. In every case hitherto it has always happened to me like that, but nearly always with those from whom I had expected most. Thus, for instance, I have come to the same opinion as all the other German botanists in regard to Schleiden, namely that there is nothing in him as he is at present, nothing in the least to boast about in him or to distinguish him. The excellent and unsurpassable work through which Schleiden, as an unknown young privat docent, won for himself with

such rapidity and so meteorically a great and imperishable name, will remain unforgettable for all time, whereas his independence and originality are nothing but inflated egotism, arrogant despite of all other, often much more thorough, accurate investigators, who are in any case much more modest and more discerning than he; and now Schleiden, whose originality is declining more and more, day by day, is only fit to disparage, in possibly rough, insulting language, everything that is not thoroughly acceptable to him, to maintain his own original views as infallible and to advertise them, whether or not through later researches they have long ago been proved completely to be erroneous, in short, to negate and find fault everywhere. But in my dreaming of beautiful lofty ideas which afterward melt into nothing, I am running away altogether from my subject. I wanted quite seriously to tell you that, on account of the above-mentioned circumstances, I have been thinking for a few days of going in the summer to another university, either to Berlin or to Breslau. Most of my acquaintances are now going to the former; what I myself gain by going there it is superfluous for me to say; I will only add that yet another magnet attracts me now to Berlin. That is, the hope to be perhaps more deeply introduced by Al. Braun, one of the most excellent investigators of cryptogams, into this magnificent sphere of natural science which, on account of work upon which I

am now engaged, has powerfully attracted me. Besides, next summer I would still have my friend Hein there, and then, as in reality I need not tell you, I have once again a hearty longing to live together with you and to share my every moment with you. I would go to Breslau on account of the medical clinics, which, as I hear everywhere, are quite excellent (with Frerichs, with whom I would also follow special pathology and therapeutics), particularly for beginners. When one begins to practice in the clinics much depends upon the number of the students being possibly small, so that the individual ones have to treat very many cases, and also receive special guidance from the teacher himself. This can only be found combined in a small university, and it is said that for this reason Breslau in particular is quite excellent. In Berlin one finds exactly the reverse; the clinics there are of no use to the beginner. If, therefore, next summer nothing shall happen for me with regard to Breslau, it would not be impossible for me to go there in the summer of '55. In any case I shall make further inquiries. Concerning these and many other questions in connection with them, I have been thinking very much and in all directions during the last weeks, and have also taken the opinion of many of the senior medical men. The final conclusion which I draw from it remains, however, always the same, namely, that I shall still remain here for the summer. Even if much should not come out of the micros-

copy with Kölliker, there still remains for me an abundance of other very useful occupations. As the chief courses I would take up special pathological anatomy with Virchow, as well as his *privatissime cursus*, which has its equal nowhere else, and which attracts most men here. But, in order to make the best use of it, I shall have to devote myself very much during the holidays to special pathology (of which up till now I understand nothing). Then I hope in this latter to be at least so far at home that I can begin in the summer also with the medical clinics. Then I might still perhaps (I tremble and I shudder while I write this) take up surgery. In the place of old Textor, who has grown completely incapable, quite a young surgeon, from Prague, who is very well spoken of here, will come here. Perhaps I might then also try in his surgical clinic to get rid of my abominable nervous sensitiveness, which would be a good thing for me to do, and would really be very necessary! Therefore, you see that plenty of good occupation could be found for me, not to mention that I still want to make many preparations and that I have also still in my mind to prepare myself in certain branches of natural science, namely physics and zoölogy, for the *examen philosophicum*. I would then go up for the latter at Easter, '55, after I have followed zoölogy, mineralogy, *materia medica* and philosophy in the winter in Berlin. In any case I beg you to send me here soon the list of the Berlin

lectures of *last winter* ('53–'54), as well, also, as that for next summer.

On one of these last days I had a very nice experience through a semihypochondriacal idea, the history of which will perhaps amuse papa. I had thought for a day or two that my bowels had not been acting properly, and for that reason, in order for once to make practical use of my magnificent(!!) medical knowledge, after I had for a long time turned over the pages of my prescription book, I prescribed for myself some pills compounded of rhubarb, jalap root, two to be taken every two hours, naturally quite according to the prescription; but can you imagine my joyful surprise when my landlady returned from the pharmacy with a box full of pills of the size of a good musket ball, and asked me whether the ball was to be swallowed by a horse or an ox! I do not know even to-day where the error has been made; the pills were prescribed exactly according to the book. But I have had enough fun out of it, and you might well imagine how I hope that with the help of God my entire practical course of medicine will take just as tragical an end as this first practical purgative attempt on my own nonentity!

Yesterday evening there took place the final sitting of our physical and medical circle, the members of which had dwindled down from 60 to 30. Unfortunately enough, it happened that just at the last moment it was my turn to give a lecture on

the cryptogams. I had already hoped to have escaped from it. But, after all, it passed off much better than I had expected. The immensely painful anxiety with which I had daily dreaded this hour for nearly two months was, however, as a matter of fact, rather unnecessary. I must admit that at first it was as though my voice would die in my throat, but after the first sentences, which I had learned by heart, had been delivered, the rest flowed off quite fluently and easily; and I made the speech quite *extempore*. Beforehand I had only written down the skeleton quite in general terms. For the rest, in spite of the many unnecessary anxieties and pains, the story, as I have already told you, has given me much pleasure, by having afforded me the opportunity of making the closer acquaintance of the magnificent wonders of the lowest and apparently simplest plants. . . .

48. WÜRZBURG, *20. 3. 1854.*

DEAR PARENTS,

. . . Let us hope that for Easter we shall have such magnificent spring weather as we have been experiencing during the last few weeks. I have taken advantage of it by going for a few longer walks; for example, on Sunday (a week ago) to Versbach, where, to my greatest joy, I found in the woods a few most precious microscopic mosses, and still more so one with beautiful male flowers (*Phascum cuspidatum*). The walks have done no harm to my

knee. I am now again trying my best to harden it and to accustom it to long excursions, although it appears to be just the same, neither better nor worse. In the town and for shorter walks I always go now without a stick, which was difficult for me at first, but now I can manage quite well. In these courageous attempts to bring the lazy knee into decent working order again there is a powerfully long spur goading me onward; that is to say, the most intense longing to see the Alps during the next summer holidays. I do not know how it has happened, but quite against my will and wish this uncalled-for desire has so firmly built its nest in my brain that I cannot get rid of it anyhow, and my imagination already conjures up the most beautiful pictures of the Alpine world, of landscapes, plants and animals. Then I think: if nothing comes of it this summer while you are still in southern Germany, then once for all give up this bold idea! I ask you really seriously, dear Papa, to consider this question. If something comes of it this autumn, then I shall persevere with the greatest patience in the sandy uncongenial Spree-Athens as long as you like. Then, in any case, I can ruminate over the sweet irreplaceable reminiscences of my travels! But, as a real Alpine journey, such as Karl made in the autumn of '44, will be impossible for me on account of my knee, I have sketched for myself for the present the following plan: I travel from here direct to the South Tyro-

lean Alps (the greatest treasures of plants are congregated in South Tyrol) and I settle down there for a few weeks, and formally establish myself there with my microscope. From this fixed point I shall then make small daily expeditions in all possible directions, shall gather hay and vermin to my heart's desire, shall draw and use my microscope at my ease, etc.; in short, it will be divine! As yet I have not fixed upon any particular locality in my mind, but I have already thought of the Fassa Valley, the Schlern Mts., or the Meran district. . . .

That you hear so many beautiful concerts, dear Father, is very satisfactory. Last week my acquaintances dragged me also to a Harmony concert, where a celebrated Hungarian violinist, "Ernst," played very admirably, in particular variations of the "Carnival of Venice." The only music, however, that can give me real joy is the national songs accompanied by the piano. For my part, nothing surpasses the so-called "Schnaderhüpfl," the grand nature-breathing Alpine songs of the Swiss and the Tyrolese, with their magnificent exultation and yodling, which make one's heart leap. Thus, when I was with Hein and Gerhard at Schenk's last evening I again heard a few quite charming little songs of this description: "Farewell to My Mountains,"—"When the Sun Rises,"—"Spring is Coming," etc., etc., sung by the same young lady (the friend of Frau Professor Schenk) who sometimes sang Upper Bavarian songs for us

last winter. This is really the only kind of music that I should like to be able to perform myself. . . .

On the same day there was a large masquerade ball at the Harmony. After it had been going on for a long while it suddenly came into my mind in the evening that for once I would be a spectator of the folly. First of all, I had never seen a masquerade ball, and, secondly, it happened that on that particular evening I was so sadly down in the mouth that really I could not settle down to work, and I thought that this might somewhat distract me. Therefore, no sooner thought than done. I pump an entrance ticket out of one of my acquaintances, I go there and amuse myself very much with the masquerade processions, the comical dances, and the adventures and drolleries in which my acquaintances become involved. But imagine my astonishment when, after a short time, I myself, who was not conscious of knowing, with the exception of Frau Professor Schenk and Frau Dr. Gsell-Fels, any female soul in the whole of Würzburg, even by sight, was addressed by a young masked girl, garbed in a black mantilla and a black biretta with two roses and two ostrich feathers on it. She reproached me for not taking enough notice of the ladies and for mixing so little among people. In this I was acting against the will of my parents, as she well knew, etc. She continued in this strain, reproaching me always with my ever-secluded, dead life, in which I timidly held myself aloof from all people,

the selfishness and sadness of it, etc., etc., and, finally, extorted from me the promise that henceforth I would move more among people. I promised I would do so if she would write down her name for me, being really extremely anxious to make the acquaintance of this being of whose true character I had no knowledge, as is even the case up till now. Then she wrote me her presumed name on a piece of paper and immediately disappeared in the crowd, while I tried to read the name, which later on I deciphered to be "Merriment." Naturally, at first I was terribly dumbfounded and could scarcely answer. But afterward the story highly amused me. I presume her to have been a friend of one of my acquaintances (probably of Franqué's), who had set her on to me for the purpose of reading me a lecture. For she mentioned several details which were known only to some of my friends.

For the rest, I shall take all your admonitions to heart! . . .

Keep in your love as hitherto your faithful old

ERNST.

49. WÜRZBURG, *Saturday, 25. 3. 1854.*

MY DARLING BELOVED PARENTS,

What would you say if I came to Berlin next summer? I hope that you will rejoice just as immensely about this now quite *irrevocable* resolution, which is not the passing idea of a moment, but the fruit of many months of long meditation,

as I who can scarcely grasp and think about this *stupendous* happiness of passing next summer once again in the dear parental home. Perhaps when you read this sentence you will scarcely trust your eyes, and you may perhaps even be annoyed that I have so inconsiderately abandoned the resolution, that was apparently so strong, to continue my stay here next summer. But that is not so. First hear and then judge! As you know, three reasons in particular moved me to remain here: (1) the Virchow course, (2) the prospect of further training myself with Kölliker *privatissime* in microscopy, and (3) finally, the intention of finishing the practice in dissection. The latter I have attained by my being already almost done with it; or, in any case, within the next eight days, in which I intend to make the best use of every day, I hope to come to the end of it. With regard to the beautiful dreams about *privatissime* in Kölliker's microscopy, there is no hope of their realization for *next summer*, for cogent reasons which I shall explain to you in detail verbally; thirdly, and finally, the classical course with Virchow, especially the *privatissime* course in pathological anatomy (which is only to be found here and nowhere else), was the chief magnet that attracted me here, from which I had hoped most. But the following has happened: according to the *unanimous* judgment of all the senior students and Drs. med. who have heard that course, and who believe it to be the best one

here, and who with one voice are enchanted with it, one can derive the true advantage from it *only* if one is already complete master of special pathology and therapeutics and has already personally attended the clinical course itself; but with me, as you know, neither the one nor the other is the case. I had formed the bold idea of cramming the necessary knowledge in this subject, which requires years, with due application during the short time of the holidays. Now that I have begun to put this idea into practice, I am convinced of its impossibility. Others had also predicted this to me. Likewise, all my acquaintances had unanimously dissuaded me from the desire to follow the Virchow course yet. But what has definitely moved me to abandon it for the present is the (surely impartial) advice of Virchow himself. I would gain nothing by it now, but, on the other hand, would lose much time and labor. Finally, I had also the intention of attending the clinics here, medical as well as surgical, in the summer, without having followed the corresponding theoretical lectures. It must be admitted that this folly is committed by many of my fellow students; I am now convinced of the futility of this intention. To make up the full complement of the circumstances that drive me away from here, I must add that unexpected unpleasant changes have taken place here recently, which I shall explain to you in detail by word of mouth, in the list of the lectures for next summer. These have

destroyed my entire plan, which I must admit was in itself rather foolish. But even if all this would not have been as it is, there are still a thousand more external circumstances existing which completely disgust me with my idea of staying here. First of all, *all* my friends are now leaving here; most of them go to Berlin, above all my Hein. Then, nothing has come of my plan about the new rooms I wanted to take, and there are also many other minor reasons. Now, my dearest parents, consider, on the other side, the advantages of Berlin. First of all, there is my dear, infinitely cherished parental home. I cannot find words to describe how immensely I rejoice that I shall live together with you again. Since this delicious certainty has come over me I am in such a blissful delirium of joy as I have not experienced since the birth of my nephew, so that out of sheer joy I was dancing about in my room so wildly that my landlady came in to me quite frightened, believing that something had happened. Then the intercourse with the many, many dear friends and relations, above all Aunt Berta, marvelous old grandpapa, in whose society who knows for how long I can still delight. Last of all, the infinite treasures of science and art that stand in the richest measure at my disposal in the "Metropolis of Intellectuality," the museums, the Royal Library, the Botanical Gardens; then, again, the inspiring and useful intercourse which I miss almost entirely here, with friends devoted to natural

science. Then, still, the classical courses, above all those of Johannes Müller, for which I am most eager, then those of Weiss, Lichtenstein, Mitscherlich, Ehrenberg, etc., etc. I ask you, my most beloved parents, to take all these together, and you will find it inconceivable how I could have hesitated so long to leave this place, just as inconceivable as all my friends and I myself find it now. . . .

My very dearest parents, let me know by return what you have to say to my resolution. I, for my part, am quite resolved about it, and shall not alter it again. In any case, here I have taken as much advice as possible about it, and as a result it has generally been approved of. I think you will also agree with it?! Or, do you not want to have your faithful boy, who loves you so fondly, once again with you for a longer period of time? . . .

50. [HELIGOLAND], *Thursday, 17. 8. 1854.*

DEAREST PARENTS,

I am enchanted!!! This for the moment. In one of the next days more about my first sea trip, during which I did not show a sign of seasickness, although rather a considerable breeze threw nearly all (with the exception of about five) of the passengers (about fifty) into the most abominable fit of the blues. The hours during which the sea trip lasted, from this morning early at 8 till 5 in the evening, were nearly the most beautiful in my life; there is nothing I would care to exchange for them! . . .

With the heartiest love, your extremely merry and gay, really enchanted,

ERNST H.

51. HELIGOLAND, *Sunday, 20. 8. '54.*

MY DEAREST PARENTS,

On Wednesday, 16. 8., at 8 o'clock in the morning, I left Berlin, as you know, with my traveling companion Adolph de la Valette Saint George, together with 200 lbs. of luggage overweight. Concerning the journey itself, there is little to be said. The strangest thing about it was that we passed through portions of Danish and Mecklenburg country, and that in the latter we saw an officer with a high upstanding collar, a variety of the *miles gloriosus* just as rare as it was strange. Otherwise the country is very monotonous. Only at some distance from Hamburg beautiful leafy woodland begins to alternate with wide stretches of meadows. It was very nice that still in Berlin a second acquaintance of ours, Corodi, the Transylvanian theologian and follower of "the simple life," who had visited me once in the afternoon, entered our compartment. We were very cheerful and jolly for once, at last, to have escaped from the hot, dusty atmosphere of Berlin.

At four o'clock we arrived at Hamburg, and, with the idea of not leaving there till Saturday, went to Zingg's Hotel. After we had regaled ourselves with a fried sole, a delicious fish (*solea*), both of us,

Valette and I, commenced our wanderings through the extremely quaint town. For a great part it still consists of antiquated houses, like those one sees in such numbers in Frankfort-on-the-Main, but besides them there are also many beautiful houses, quite like those in Berlin. All the streets through which we passed were crowded with a throng of men, such as I have scarcely ever seen before. Fishermen, seamen, sailors, constituted the majority, among them very many foreigners, sunburnt southerners, dignified merchants and sea captains, and whatever else the exceedingly active commerce assembles here of all descriptions of men. Besides that, one saw in the streets scarcely a house without several shops, but many in which there were half a dozen together. You may imagine the shouting and noise, the swarming and crowding, which are inseparable from such an immense active traffic. In short, there were a movement and a bustle such as are always described as belonging to the most animated commercial towns. Specially interesting to us were many shops containing the strangest and rarest foreign animals and other products of nature. Magnificent collections of beetles and butterflies, stuffed birds and fish, products of art from remote regions of the world, and such like, were hanging and standing in the windows in jumbled variety. First we went through Admiralty Street to the harbor. If I am not capable of describing quite well to you the absolutely new life which

opened itself before us here, after the impression it made upon us, the reason is to be traced to the fact that this impression was still surpassed by the manifold delights which we experienced afterward. I must admit that in descriptions of travels and so forth I had already read much about the life in such a harbor, and I had also drawn for myself rather an accurate picture of it; but, nevertheless, my expectations were far exceeded. Such a perfect forest of ships, masts, yards, rigging, and sailors climbing about on them, I could scarcely have imagined. We were quite enchanted and I did not know at all what to admire first.

After we had looked on at this scene of activity for a while, we mounted to the Elbhöhe, or the Stintfang, a high hill above the harbor, from which one enjoys a beautiful view over the latter as well as over the entire town and the shore on the other side. When we strolled back slowly through the different streets of the town, and thus came over several beautiful places on one of which a very beautiful new church, the Nikolaikirche, similar to our Petrikirche, will be erected, and reached the opposite northeastern end of the town, we were surprised on the Jungfernstieg by a view scarcely less beautiful. There are two great clear-water basins, one behind the other, separated by a bridge. The inner basin, the Binnenalster, is surrounded on three sides (the fourth side of the square is formed by a dam) by three magnificent rows of houses,

the three Jungfernstiegs. Here one sees, as, in fact, in most parts of the town which were saved from the great fire, nothing but beautiful large houses in the new architectural style of Schinkel. One of them is the "Bazaar," an elegant long arcade covered with glass, a glass palace *en miniature*, the two sides of which are formed by nothing but shops adjoining one another, containing the most magnificent and most precious merchandise of all kinds. Among them is an underground cellar, as at Kroll's, in which all classes and kinds of people of both sexes enjoy life, in a very South German homely way, with beer and wine. There we met our Transylvanian again, in company with several compatriots and comrades, with whom we arranged to make an excursion together to the surroundings of Hamburg on the following day. But scarcely had we left them when La Valette, who had previously complained strongly about the "altogether too primitive behaviour" of these people, and about the fact that "they had not even a clean shirt on their backs," declared that he could not possibly go with them for the excursion we had arranged, and that he preferred to leave without delay the next morning. After a long debate, *pro* and *con*, he succeeded in convincing me to follow him, expecially as he demonstrated to me that we had already seen everything that was interesting, and more of that sort of thing; about which I became very annoyed afterward when I learned what beautiful excursions the

others had made. After various quarrels, in which at length I gave in, we concluded to wander out once again to the harbor where the others dwelt, in order to let them know that we would not go with them. Then we inspected Hamburg by night, and strolled as far as the Alster basin, where the three Jungfernstiegs, with their many thousands of lights reflected in the water, afforded us a very fine spectacle.

In this manner, during the few hours of our stay in Hamburg we have surely obtained quite a clear idea of the magnificent commercial town, but if it will be possible, I still hope to stay there on the return journey for a few days more, so that I can examine the numerous curiosities somewhat more exactly and minutely, in particular see the magnificent flower gardens, and then make the charming excursion on the right bank of the Elbe to Blankenese. The greatest affluence is apparent everywhere in the town; living is also exceedingly comfortable and luxurious. People make it their chief business to scrape together as much money as they can, and then to devise how they can live as well as possible, *i.e., in modum Horatii*, to eat well and to drink well. That the morals have proportionately deteriorated you can easily imagine, and in this, as in many other respects, Hamburg is probably in the same rank as many much greater cities of the world.

On Thursday, 17. 8., at 6 o'clock in the morning,

we left Hamburg in the fine three-masted steamer *Heligoland*, which has two engines and funnels, and in beam, length and draught is quite a respectable sea-going ship, standing at least eight feet out of the water. It was specially built this spring for the passage from Hamburg to Heligoland, is constructed entirely of iron, and in its whole appearance gives a very respectable impression. The weather, which at first was fair, soon became very dull, and it began at times to rain rather considerably, which, however, did not prevent us from remaining all the time on the upper deck, whence we had a thorough look at the magnificent right shore of the Elbe, as far as the rapid passage allowed us to do so. It is really quite charming. Very graceful country houses and villas, built in the antique style and very romantically situated on the different elevations along the shore of the Elbe, which rise at least from 50 to 80 feet high, surrounded by rich flower gardens, alternate with beautiful clumps of trees and multicolored pasture land. Thus a series of such Tusculana begins immediately after Altona, which, in reality, only joins Hamburg as a suburb and stretches almost uninterruptedly to the famous fishing village of Blankenese. On account of its charming situation, the latter enjoys a high reputation. The individual houses on promontories, surrounded by woods and clinging to the scarps of the red rocks, are highly picturesque. Soon afterward, through the widening of the river Elbe,

which is now increasing in importance, the high, steep shore becomes lower and more monotonous. and retires more and more from view. To compensate for this, other objects attract the eye, the movement of the waves begins to be felt, and the sea birds, gulls, terns and divers, making their appearance as we approach the open water, arrest the attention. Specially noticeable are numbers of very graceful little white gulls, which continually flock around us. From time to time, pilots from the neighboring stations are boarding the ships, in order to guide them through the navigable channels, which are very dangerous and in which rocks and shallows abound. This lasts still for a good distance after we pass Cuxhaven, which is the last stopping-place, and whence to the right black buoys and to the left white ones mark the channel. For a long time before we reach Cuxhaven, after Glückstadt, the right shore of the Elbe has already disappeared, and nothing is to be seen of the left, either. Instead of it, to the left the island of Neuwerk, with its lighthouse, comes in sight, and soon after to the right one sees the pilot-boat permanently stationed here, and further on a red-flagged lightship. This marks the last of the estuary of the Elbe, and now we sail out suddenly into the open sea. With what tension I anticipated this moment I can scarcely tell you, and yet my hopes were far exceeded. Certainly we had by no means what is generally called a beautiful, *i.e.*, a calm and gentle, voyage, but to

my greatest joy, as well as to the terror of the other passengers, among whom was also Professor Poggendorf, of Berlin, with his wife and daughter, soon after our departure from Hamburg a violent northwest wind arose which already near Cuxhaven had increased to a regular gale, so that only with the greatest trouble and real danger could the passengers be taken ashore in boats. The violently raging waves threw the little boat with such force against the iron walls of the ship that one expected every moment it would be dashed to pieces like a nutshell. Rolling in the waves of the Elbe, even for a long time before we reached Cuxhaven, the narrow saloon was filled with hysterical females and husbands sympathizing with their wives, who were seized with the horrors of seasickness, surely to a great extent through pure imagination, and who were now quite miserably maltreated by *miseria felina varietas*, so that one could not decide whether to laugh about it or lament with them, but in the end one chose the former. For my part, I had made up my mind that under no condition would I be seasick, and I have faithfully carried out this resolution. And this means something when you consider that this was my first sea trip, and that out of about 50 to 60 of the passengers on board only four or five were not seasick. But most of them were already so afraid of it beforehand that they crept away right down into the saloon, where the rolling and pitching was in any case most to be felt,

and where I myself might have become seasick. However, it would not have been a miracle if I had. But I did neither of these things; on the contrary, in spite of rain and storm, I continued to remain on the upper deck, firmly wrapped up in my overcoat and with my cap bound crosswise over my head. In the beginning I had the best place of all, that is to say, I stood near the captain high up on the paddle-box, where one could look not only over the upper deck, but also at everything one wished to do far around in all directions. But when we were at last in the open sea, and the violently roaring and breaking waves were dashing every moment over the 8-ft.-high bulkwarks of the forecastle from both sides, and regularly washed over it, my high position became somewhat tedious to me, and I thought it would be much more pleasant to follow the example of some merry musicians who were sitting quite in the bows, on the bowsprit, that is to say, on the little inclined spar at the bow of the ship. I took up a place in front of them, and now sat the very foremost one on board the ship, riding on the bowsprit, protected in front and supported firmly by the rails on each side, which here joined, and to which I could hold fast quite comfortably and securely. Naturally the movement of the ship, the bow and stern of which were alternately lifted into the air and then deeply thrown down into an abyss by the movement of the waves, was strongest here. But it was not the unpleasant

rocking to and fro that had brought disaster to the ladies in the saloon, but a highly pleasant swaying motion, as though one were on a very high swing. I cannot tell you at all how immensely well and merry I felt, and with what delight I inhaled the pure sea air and enjoyed the magnificent, gigantic waves. I had heard a great deal about waves as high as a house, 20 feet and more in height, and I had always believed this to be a myth and an exaggeration, but now it was completely realized before my eyes, and how grandly and splendidly! What a delightful sensation when the 12-ft.-high bowsprit first leaped up into the air, so that one could almost see the keel of the ship in front, and then again, like a storm bird, dive head first deep down into the valleys of the waters, so that the waves met high above our heads! And what shouts of joy every time we became drenched to the skin. Only too quickly for me and for the end of this unparalleled happiness, after four hours' voyage, indeed, too ardently wished-for and warmly desired by the poor seasick people, there appeared on the horizon the reddish strip which proved when we approached nearer to be the "Holy Island." Also this apparition, breaking the monotonous curve of the horizon, was quite a peculiar sight; indeed, the fact of being at sea, far out in the open where one is surrounded on all sides by nothing but air and water, and where only here and there at intervals a gull, a sea swallow or a storm bird interrupts and

animates the immense desert of waves, has made quite an indescribable impression upon me. I believe this first trip, which I had so long previously been looking forward to enjoying, to be absolutely one of the most beautiful and most joyful events of my whole life.

At 4 o'clock in the afternoon the beautiful three-masted steamer cast anchor between Heligoland and the Dune (or sand island). Immediately there appeared several boats manned by Heligolanders, who took the poor passengers, nearly all of whom were terribly run down by seasickness, to the small long-desired island. But here there was a difficult task still to be overcome. Whenever the ship arrives, a barrier about 80 paces in length is placed from the shore to the first houses, on each side of the 3-ft.-wide road which the strangers have to cross. As soon as three cannon shots have announced the arrival of the steamer, all of the seaside visitors and the inhabitants of Heligoland assemble there, and in quite a loud tone of voice they count the new arrivals one after another, and, in the most insolent and unrestrained manner, offer their critical and other remarks about them. Unless one has previously been made acquainted with this abominable reception, one really scarcely knows how to run the gantlet as quickly and unobservedly as possible. After we had now happily escaped from the remarks and jokes of the respective visitors, we immediately went with our things to look for rooms. . . .

22. 8. Tuesday evening.

If you should wonder how this blue sheet of paper tumbled in among the white ones, the explanation is that it was written in the morning on the Dune, quite *extempore*. It happened thus: I went this morning early, as usual, at 6 o'clock by the first boat with which the bathing attendants, male and female, cross to the Dune. After I had taken my bath a terrible squall, rain and storm, came on, so that I quickly took refuge in the pavilion which is there, and where I waited in vain for over an hour for a boat to take me back. But when none appeared I sat down in despair and began this letter. The praise bestowed upon this exceedingly magnificent bathing-place is certainly only weak in comparision with the inexpressible delight which I experienced in it, as well as in the whole of the marvelous seaside life, which is so absolutely new to me, and which introduces me into quite a strange new wonder-world. Indeed, dearest parents, you must not expect too much from my letters from here. I can only give you, verbally, the chief description of my life and doings here. I can find absolutely no time (which, at least for me, is here more precious than everything else) for letter-writing, but still less for the necessary rest, which, if I have indeed ever had the good fortune to obtain it, is now completely lacking. Scarcely have I ever had such constant burning anxiety and internal unrest as I have here, although my stay in this

place could and ought to be a real paradise if only I would be less passionate. But life appears to me here to be a real chase. But more about this later. Now I shall continue my diary.

On Friday, 18. 8., my first business was to go over for a bath to the Dune, or sand island, a narrow, long strip of sand at about a quarter of an hour's distance from the island. Bathing takes place here almost daily, because the bottom of the sea is quite flat and sandy and the rolling of the waves is very regular. The only exception is on very stormy days, when the landing by boat on the bathing island is impossible, on account of the wild breakers, and then bathing takes place at a little spot on Heligoland itself. The bathing time lasts from 6 A.M. till 2 P.M., and on the whole, as I have already discovered, it is very much the same whether one bathes at high or at low tide. In both cases the breakers have very much the same force; at low tide there is still the agreeable fact that in order to get into deep water one need not run out too far from the shore. The bathing-places for ladies and gentlemen are situated on opposite points of the sand island. Here at each place there are standing, side by side, from 30 to 50 bathing-machines, in which one undresses and which are pushed out a little way into the sea. When one has finished bathing the two-wheeled machine is drawn back to the shore. Till now I have always remained in the water from two to five minutes at the outside,

and have found this quite sufficient. At first when I go into the water I always feel a very unpleasant chill, but this gives place afterward to a warmth all the more agreeable. Some hours after bathing, toward midday, I even feel considerable heat all over my body, especially in my head. With what immense joy I always throw myself into the waves which are generally from 3 to 4 feet high, as they break on the shore, I can scarcely describe to you. You yourselves have found sea bathing so pleasant. How much more magnificent must it still be for me, an amphibian!

On Friday, 18. 8., in order to make the first beautiful acquaintance of the sea as a bathing-place, to be followed by the second introduction, namely, to the marvelous manifold and glorious inhabitants of the sea, after I had refreshed myself quite early by taking my first sea bath, I collected the first seaweed, together with a quantity of magnificent little algæ plants settled in it and between it, with little parasitic animals, crustaceans, worms, mollusks, etc., thrown up haphazard on the shore. So as to avoid repeating the same expressions of the highest delight in my description of my every-day's work, I may remark once for all with regard to the marine animals and the marine plants, the study of which was the chief reason for my coming here, that all my expectations and hopes which you yourselves know were so highly strung, have not only been fulfilled, but even still by far surpassed. I

cannot in the slightest degree succeed in making clear to you the delight and the happiness with which the observation and the acquaintance of this magnificent sea nature, with its numerous wonders, inspire me daily. Nay, hourly! I can only say the one thing, that with one touch of the wand I have been transplanted into quite a new world, just as though it were into another planet. Everything here is totally different! Everything—the animals, the plants, the earth, the water, the air, yea, even the men—is so strange and attractive to me. In short, I can tell you, once for all, that from the scientific point of view I am satisfied in the most perfect manner with my first seaside expedition. Besides our first microscopical and anatomical, zoölogical and botanical studies, immediately on the first day La Valette and I also visited the two, or rather three, men to whom we had been recommended by Joh. Müller, etc., to assist in procuring animals and plants and so forth for our collection. They are: an elderly islander who has always occupied himself solely with collecting marine plants and animals, and who is now my special friend and counselor (or *vice versa*), and two younger fishermen, the brothers Oellrich Aenkens, sailors and collectors of natural curiosities, who possess a very beautiful collection of all kinds of marine specimens. These three form our contingent of assistants in natural science, they are our menials and personal attendants, and daily fetch and carry everything

our hearts can wish for, starfish, crabs, polyps, etc. Even on the same evening we went out fishing immediately from 9 till 12 with the two Aenkenses. It was quite a dark, starless and wildly stormy night. I took my turn at holding the lantern, drawing up the net, etc., which amused me very much. The whole thing was very romantic. On this occasion we caught a great quantity of common crabs and some strange fish, especially *Cottus scorpius*, *Aspidophorus cataphractus*, *Syngnathus Acus*, *Zoarces viviparus*, etc. We also saw some little phosphorescent animals. . . .

On Saturday in the afternoon I welcomed my two Transylvanian friends, whom I had met already in Hamburg at the landing stage; they had now come over for a day to have a look at the very peculiar island, which even in itself is worth a day's visit. On Sunday morning in the most beautiful weather I made quite a charming excursion with them and their traveling companion, a financial counselor from Stuttgart, who was also botanizing seaweeds, by boat around the island. But the latter is really of miraculous construction! Quite a naked, bare rock of red sandstone, rising several hundred feet vertically from the level of the sea. Only here and there on the steep wall of rock is there any greenery growing, and that is the common garden cabbage (wild). The top of the rock, however, is quite flat, planted with potatoes, and upon it stands the light-house, as well as the fisherman's village proper, the

so-called Oberland. (I dwell in the Unterland, a washed-up sandhill on the southeast coast, where there are only dwellings for seaside visitors, and inns.) The western side of the rock shows the most magnificent groups of rocks, gates, vaults, walls, towers, and other rock-forms, all produced by the corroding action of the sea. In our little ship we did not know in what direction to look first, whether at these grotesque, picturesque rock-forms, or at the marvelously blue sea and its wide horizon, or at the raging breakers, high-rolling, dashing against the foot of the cliffs, or, finally, at the charming wonders of the animal and vegetable kingdom which floated about in our neighborhood. More than anything else, I was enchanted with the jelly-fish, or *medusæ*, which I now saw for the first time, large glass bells, half a foot to a foot in diameter, of highly marvelous structure and form. Near them on floating seaweed there were attached small colonies of polyps, from which the jellyfish grow. But the most delightful of all were shoals of small jelly-fish with long tentacles, of which the accompanying picture (twice the natural size) will give you an idea.

On Sunday afternoon, 20. 8., accompanied by the Stuttgart financial counselor and the two Transylvanians, I took a walk along the shore half round the island when the tide was lowest. At quite low tide one is supposed to be able to walk quite around the island, because the somewhat broader

foot of the rock is then exposed. I found the first starfish (of a beautiful violet-blue), besides several sea snails and a sea anemone, quite a magnificent polyp, as large as a rose (on this account also called sea rose here) and shaped like an anemone flower. It was the strange *Actina holostica*. In addition to that there were attached to the stones lying bare at low tide, quite marvelous specimens of seaweed, red, violet, brown, and green, which we could not admire enough. In short, we were quite enchanted with the richness of the marvelous new gifts with which the *alma mater natura* once more surprised us here. In the evening I met my friends again in the local inn, "The Green Water," where the inhabitants of Heligoland performed their quaint national dances and showed themselves to the stranger in their native characteristic peculiarity. Another time I shall write more about these strange sea-folk, whom it is really quite worth while to come here specially to see. They are still quite a magnificent North German original tribe, although the foreign influx has already introduced many so-called customs (*i.e.*, bad habits). On Monday morning my acquaintance left again. With La Valette and Aenkens I made an excursion by boat to the north of the island, where we caught a dogfish (*Galeus canis*) and several haddock, with pretty little parasitic crabs in their mouths, and where with an iron dragnet, which is also used for catching oysters, we swept large areas of the bottom of the sea

several times, and brought up much rubbish with it. There we found the strangest seaweeds (*Cruoria, Laminaria, Phyllitis, Polysiphonia*), overgrown with the most charming polyps (*Flustra*), etc., and very nice little worms, with large magnificent multicolored tufts of feathers (*gills*) on their heads, which live in compact tubes of chalk, and which can also retire into them (*Serpula triquetra sive tricuspis*); also many other little sea animals, especially crustaceans. But the most beautiful were several magnificent sea urchins, as large as one's fist (*Echinus esculentus*), which present quite a magnificent sight with their pretty little rows of feet, when they are playing about in the water. And then we caught several of the really most delightful little jellyfish, the acquaintance of which we had already made on Sunday. You might well imagine that we had more than enough to do during the following days with these treasures as well as with those we collected on Sunday. I do not want to speak about work, for, taking into consideration the immense mass of material from all parts which inundates and overpowers to the most fabulous extent everybody who does not know the sea and its wonders, to undertake this is quite impossible here. The only thing that one can do is just to take one quick glance at the things, then to clean them as quickly as possible from the adhering dirt and sea water, and then immediately to put them into spirits or dry them between blotting paper.

As you can easily imagine, this is in no way a very pleasant or sweet occupation in leisure moments, as I had altogether pictured my life here far too idyllically, but it is a highly uncomfortable and unrestful haste and hurry, without distinct purposes and aims; the quantity overwhelms, suffocates, in the real sense of the word, so that one has no time for a deep, calm, pleasurable contemplation of the individual wonders of nature, to say nothing of a thorough, penetrating study of them, which alone, in any case, affords real satisfaction. There can be no thought of drawing, painting, describing, dissecting, microscopy, etc., of the individual forms of animals and plants, as at first I had depicted to myself as being so charming and full of enjoyment. The time is scarcely sufficent to pack up the collected treasures for preservation, the animals in spirits, the plants in blotting paper. The microscope can only serve the purpose of a superficial and hasty glance at the sea wonders of the animal and vegetable kingdoms. I shall be thoroughly glad when I am able to sit at home again and when I can look at and study the collected treasures with enjoyment and at leisure. One feels quite upset from the eternal changing and mounting of the stinking, but very beautiful and peculiar seaweeds. Thus I have spent nearly the whole of Tuesday and Wednesday in this noble occupation. . . . Yesterday morning Tein Taten brought me a few little creatures (*Arenicola piscatorum*), very interesting

gill worms, and sand pike (*Ammodytes tobianus*); yesterday afternoon, Wednesday 23. 8., however, a real treasure which he had procured for me during a catch of oysters, a whole basinful of the most magnificent starfish (*Solaster papposus*), of a magnificent purple color and one-half to three-quarters of a foot in diameter, then the most marvelous polyps, crabs that live in shells, etc., etc.

52. HELIGOLAND, *30. 8. 1854.*

DEAREST PARENTS,

The diary of my sojourn in Heligoland, which I began to keep and a page of which is inclosed herewith, will by this time probably begin to become rather tedious to you. In reality, it can contain nothing more than the same thing over and over again, namely, my immense joy in the sea and its life, its inhabitants and creatures, the magnificent, incomparable variety of the sweetest little animals and plants, and similar things. I cannot write it to you, as I should like to and shall relate it to you verbally; only the one thing instead of all the others, namely that my resolution to examine tropical seacoasts in the future as a naturalist, especially as a zoölogist, is now fixed (that is to say, as far as the human intention can here assert itself in any measure without the divine consent!), and that zoölogy has now crowded botany, definitely and forever, out of my heart. Further details concerning this I shall explain to you verbally, as it will

probably be the best thing for me now to restrict the further writing of letters to some extent, as, in any case, I cannot find proper quiet and leisure for anything, least of all for reasonable letter-writing, and as I should like to devote ten times as much time to microscopy. Likewise there is indeed very little that is noteworthy, or rather interesting to nonnaturalists, to be recorded concerning my life here. One day passes very much like any other, as quick as a dart. I rise at 5.30 A.M., either go immediately to bathe or study with my microscope before doing so. After bathing, which I count among the greatest bodily enjoyments and which agrees with me very well, I drink coffee, that is to say, three cups of a decoction of beet and chicory, and with which I eat a whole loaf of white bread with heavenly appetite. With the same I eat my dinner, which I have brought to me by my former landlord, Joachim Stolt. I must admit that it costs half a taler, but it is quite excellent, very savory, and so exceedingly abundant that my student's stomach-barrel is completely filled to the bung, so that afterward through percussion I can verify with satisfaction its absolute repletion. Although in Berlin we would perhaps all three be entirely satisfied with the gigantic portion, here as a rule I do not leave a single crumb of the entire meal (soup, roast joint with vegetables, fish with potatoes, pudding), which I eat with the greatest possible relish. Such a gigantic appetite is the

result of the delightful sea bathing. To compensate for it, I generally eat nothing in the evening, but at 9.30, after an evening walk with La Valette and Esmarch, happy in my heart but with a stomach rather empty again, I go to bed, where I snore in an exemplary manner for fully 8 or 9 hours. Thus, physically and mentally, I could lead a real life of idleness and luxury here, if only I could have rest and leisure. Moreover, in this way of living I come off cheapest and best in the end. The first days I ate at a restaurant *à la carte*, and was provided with nothing specially good for very much more money, and in the end had to hunger the whole day through, of which I soon had enough. On the whole, living is very expensive here, just three times as expensive as it is in Würzburg. Everything that costs a kreuzer there, costs exactly a shilling here, which is just threefold. But even if the abode here would be three times as expensive, I would not begrudge it, because it is simply invaluable to me. You cannot imagine what new things I see and learn here every day: by far exceeding my boldest expectations and hopes. Everything that I had studied for many a year previously in books, I now see here quite suddenly with my own eyes, as though conjured up by magic; as the present brings me surprise and instruction, so in the future will every hour afford me the most magnificent recollections. Moreover, everything is really interesting here (for which reason, naturally, the tedious bathing visi-

tors, who seem to me to be like buttermilk soup, and disgust and repel me just as much, find everything, without exception, to be tedious here). Even the character of the people is quite peculiar. Naturally, year by year it is more and more spoiled by the strangers. It must, however, before this have been quite a magnificent northern original tribe, thoroughly German, of which the traces even till the present time are apparent everywhere. For instance, among all the men and women we do not find a single flat and small face, as are to be seen by the thousand with us. All have a distinctly marked character and sharp, but finely cut, features. . . .

It just comes into my mind that I have forgotten nearly the chief point in my diary, namely, that on Tuesday evening an illumination of the grottos took place, but which was rather weak on the whole: altogether it consisted of about 10 to 12 red Bengal lights, which very romantically lit up the grotesque groups of rocks and caves in the southwest side of the rock. The chief pleasure it gave me was in the phosphorescence of the sea, which now in the pitch darkness of the night I saw for the first time. As a matter of fact, the whole of the sea was not phosphorescent, but a beautiful silver streak of shining sparks followed every stroke of the oar and behind my ever paddling hand. To-day, moreover, I have examined under the microscope the dearest little animals (*Noctiluca, Beroe*, etc.), which produce the phosphorescence of the sea. On Thursday, 24. 8.,

I again received animals from Tein Taten, which he found in a haul of oysters, magnificent large starfish, polyps, shells, snails, crabs, etc., etc., about which I was overjoyed. These things, so common here in the sea, could through their beauty and through their wonderful structure, if they would be more observed, provide the most beautiful patterns for works of art, etc. I am specially delighted with the marvelous eyes, which shine green and red like rubies and emeralds, attached by the dozen to the mantle edge of a shell (*pecten*). . . .

On Thursday afternoon, when we watched the passengers who had arrived by the steamer pass through the double row of scandalmongers, we observed among them to our great joy and surprise, Johannes Müller, our greatest and most sublime authority, whose presence here we had wished for so much, but had scarcely ventured to hope for any more. He came with his son Max Müller, who is Dr. med., in order to study the larvæ and stages of development of the echinoderms, *i.e.*, of the starfish, sea urchins, etc. The discovery of the history of the development of those highly peculiar animals has not a little contributed to Müller's fame, and for many a year he has derived the material for this from Heligoland. When we welcomed them they greeted us in a very friendly manner, and immediately made an appointment to go for an excursion together to fish for sea animals, etc. Through this, our whole occupation and division

of time has been suddenly directed into another channel. The collecting, drying of seaweeds, preserving of animals and dissecting, have ceased, and instead we go out in the early morning with the Müllers for one or two hours into the open sea, where in a short time with a dragnet we catch thousands of the most charming sea creatures, generally invertebrate animals in different degrees of development, radiata, worms, and crustaceans, for the microscopy of which we employ all our spare time, and with which for a long, long time we cannot yet come to an end. Details about that I can only tell you more explicitly by word of mouth.

53. HELIGOLAND, *Sunday evening, 10. 9. '54.*

MY DEAR OLD PARENTS,

First of all, heartiest thanks for your last letter, for which I had been anxiously waiting. Here, where one is so absolutely out of the world, the letters from home are really always the culminating point of the inner life, and when the steamer has arrived and the row of scandalmongers has melted away, there is nothing to be heard in every spot and corner but questions as to whether a letter has arrived. During the last week, as well, also, as in the two previous ones, I have been getting on very excellently as concerns both body and mind. Apart from the wicked old knee, on which the bathing has no effect at all, as it seems altogether to have become deadened to all excitation, I feel myself

extremely well and happy in body, as I have not done for a long time, which I attribute chiefly to the quiet magnificent sea air which I inhale with true delight, and which, in comparison with the terrible dusty atmosphere of Berlin, is as day to night. The temperature here is also exceedingly pleasant—always the same agreeable coolness. There has never been a question of perspiring heat. The bathing suits my *corpusculum* exceedingly well, and I always rush into the waves with shouts of jubilation. On the other hand, the mental occupation, work and play, during this week has been essentially different from that in the preceding one. Since Johannes Müller has been here with his son, our real day's work has commenced with our going out at 8 o'clock, accompanied by this guiding star in comparative anatomy, for a sail for one or two hours, and we drag the surface of the sea with a butterfly net, when we always find a rich selection of the dearest little creatures for microscopy. These journeys are not only very instructive, but also amusing, because old Müller is almost continually entertaining us very merrily and wittily. But as the zoölogical treasures gained in this way completely occupy us with the microscope thereafter for the rest of the day, we have little time left for other things, and especially there cannot be much thought of devoting ourselves to seaweeds and the larger sea animals. Besides these, I have made very few sea trips. On Monday, however, accom-

panied by Doctor Esmarch, a friend of his, Pastor Henel, of Göttingen, and Weber, a merchant of Hamburg, I sailed around the island. Yesterday, there being a neap tide, I made a trip around the seal rock, which I had already for a long time wished to do, with La Valette and Tein Taten. These rocks are lying east of the island, are standing bare out of water for an hour only at the lowest tide, and are quite overgrown with seaweed. Of the latter I found a few nice parasitic species. But among the seaweed there were to be found many of the dearest little animals, specially charming polyps (*Tubularia*, *Eudendrium*, *Actinia*), sea spiders (*Pycnogonum littorale*), and a very strange member of the *tunicata* (*Amaræcium rubicundum*). Besides that, we saw a few seals at no great distance from us. Yesterday in the evening we went out fishing with Aenkens to the Dune. There was a magnificent full moon, the night was warm and fine, and we fished there till about 12 o'clock. The strangest thing we caught was a beautiful green garpike (*Belone vulgaris*) with green bones, and I have been sitting all day examining the highly peculiar ova under the microscope; besides that we caught swimming crabs, a few shrimps, which are very scarce here, sea devils (*Cottus scorpius*), sprats, a quantity of different plaice and haddock (torsk), together with other fish. We had loaded our tin boxes and glasses rather fully with them, and in this respect our aim was reached. On the other

hand, in the coming (the last) week I shall be chiefly busy with algæ, of which I have already collected quite a considerable amount. With such occupations I do not know how the time passes here. Moreover, next week I shall be rather lonely, because all my acquaintances, La Valette, Esmarch, who sends his best compliments to you, and Herr Weber, are leaving to-morrow and I am remaining here quite alone. Johannes Müller leaves next Thursday. I shall sail away in a week from to-morrow, Monday. I shall then have been here for four weeks, and during that time shall have bathed on exactly thirty occasions. As for the rest, unhappily enough I have to abandon the journey to Aurich, for various reasons. The chief one of all is that I must put my treasures collected here as quickly as possible in order, otherwise the dear little creatures will become completely spoiled in the bad alcohol. Besides, I am rather tired of loafing about, and am again longing for home and for orderly, regular work. . . . If you have no objection to it, my dearest parents, I intend to arrive again in Berlin on Wednesday or Thursday week. Till then think fondly of your old

ERNST.

54. ZIEGENRÜCK, *25. 4. 1855.*

MY DEAR PARENTS,

As you yourselves might surely have thought, and as it was scarcely to have been expected to be other-

wise, I have passed very happy days here with my dear brother and sister in the beautiful nature of the mountains, so that I am really sorry to be obliged to leave this my Sans Souci again so soon. After having seen no mountains and no real forest for a full year, the undisturbed enjoyment of these adornments of nature does me infinite good, and now once more I see how intimately nature has taken firm root in my heart. The beautiful holiday time which I spent here I have devoted partly to a fresh, light-hearted enjoyment of the mountain woods, partly to reading something consecutive once again, for which I have had no time for a long while. For the latter purpose I had taken with me Karl Vogt's *Text-book of Geology and Palæontology* (based on Elie de Beaumont's lectures), which I have studied from beginning to end with the most lively interest. Hitherto I had only read desultory particulars about geology (especially by Burmeister and Cotta). In this book (which, with the habitual clearness and elegance of the pen which bestow a high charm upon Karl Vogt's writings in general, is written very attractively) I found myself for the first time face to face with the magnificent science of geology as a whole. How much I regret now not to have thought earlier in Berlin, where the splendid geological collection would have been of great benefit to me, of making myself familiar with this field of natural science. But how shall I be able to find the time to penetrate more deeply into

all the various branches of *alma scientia*, each one of which already claims a human life for itself! But, in any case, I must become more familiar with geology, and have firmly decided that that shall be my first task when I come to Berlin again, and when I have turned my back upon the loathed medicine. Naturally it is chiefly the palæontological side of geology, palæontology (the study of the animals and plants which lived on this planet before the present period of the earth, and that now exist only as fossil remains) that specially attracts me, and which is also a necessary complement to the systematic study of zoölogy and botany, from the fact that without a knowledge of these primeval organisms, which completely and essentially supplement the series of animals and plants now living, one cannot obtain a proper or complete survey of the range of the latter. Of course, I am attracted much less by the real geognostic side, or the study of the different rocks which compose the solid crust of our earth, because, unfortunately, in this I lack the necessary knowledge of mineralogy, which, again, cannot be cultivated without preliminary mathematical knowledge. The lack of the latter is the chief mistake of my entire training in natural science, and now, since I have recently recognized this more and more, I have very often cursed the stiff partiality of the Merseburg Gymnasium, where, instead of receiving proper instruction and guidance in mathematics, we were tormented by

indigestible philosophical morsels and highly useless and dry Latin compositions. But this great want will now scarcely be compensated for, and probably for the rest of my life I shall remain a duffer in *anorganicis*, to my great disadvantage!

Also in another respect than the palæontological one, the study of the geological text-book was most attractive, instructive and important through my having found detailed information in it concerning many wonders of nature which I shall encounter in my Alpine journey and be able to contemplate with twice as much understanding, for example especially, the glaciers and the general orographical conditions governing the formation of valleys and mountains. . . . The study of this highly attractive geological textbook completely occupied nearly all my mornings till to-day, so that scarcely any other time was left to me for reading, and it was only in the evenings that I could still run through some parts of Goethe's life by Viehoff, and recapitulate single episodes from *Truth and Fiction*. After I had read nothing of this kind for such a long time, this has afforded me great enjoyment, but has also specially contributed to brace up and stimulate my vital energies which already for half a year have been in a state of continual growth and development. When I see how even such an eminent genius as Goethe was doubtful about himself, and for a long time wavered to and fro during the finest years of his youth, till after he had left the university,

in constant fight and struggle with the outer world surrounding him, as well as with his own innermost about himself, before he could determine upon a firm and definite course for his aspiration and his activity; and how then, after all, the rich blossoms of his spirit unfolded so magnificently, then I also begin to pluck up new courage and new strength, and to hope that in the gradual course of the development of my nature my serious and continual striving, if I pursue it with manly energy, will likewise not be without good result. . . .

During my abode here I have generally devoted the afternoons to making excursions into the extraordinarily charming wooded valleys in the beautiful neighborhood. . . .

The most important and most profitable excursion, which occupied nearly a whole day, was that I made on Monday (23. 4.), when I followed right up to its source the charming, romantic Otterbach, which holds the first place in my mind among all the beautiful wild mountain streams in the neighborhood, not even excepting my favorite one, the Sornitz. . . .

I wish grandfather could once more have seen his dear little great-grandson, who is such a darling. He runs about the room as lively and merrily as a weasel. But I must admit that as yet he cannot talk. He only imitates very funnily the cries of the different domestic animals, from which, as well as from his delight in animals in general, I feel inclined to come to the conclusion that he possesses great

zoölogical gifts. He also pronounces "Papa"—"Da-da" (by which he means all sorts of things) very nicely, and "Ice" in which he pronounces the "s" sound with the same lisp as in the English "th." In all his very lively and amiable behavior, in his gestures and pantomime, he is exceedingly nice and funny and continually affords us the greatest happiness. That we (especially Mimi) do not miss a single opportunity of having all possible fun with the little *homunculus* you may naturally imagine. He feels quite a special joy when I take him on my shoulders and run about the room with him, when the whole of his very sly and nice little face is wreathed with laughter. He knows me very well, as, indeed, he exactly distinguishes between different persons, and understands everything that is said to him. His character is altogether very sweet, he is always merry and joyful (like Mimi), but in addition to that also duly inflammable and impatient (as real Haeckels are). Like the latter, also, he wants constantly to be occupied and entertained. I shall miss the dear little pet very much. I have really become accustomed to him, and have passed many a happy hour with him. You also will be really pleased when you see him again. Altogether the happy family life here is too sweet, and whenever I am here I always feel so extremely well and contented in it, so that often the longing desire, which scarcely will be fulfilled, arises, namely: Oh, if such happiness could one day be yours! . . .

55. WÜRZBURG, *28. 4. 1855.*

. . . On Thursday (26. 4.) afternoon I left Ziegenrück, accompanied by a one-armed invalid who carried my things. Invariably I have such difficulty in separating myself from this place, which I love so much, and so, also, this time I left my dear brother and sister and the beautiful mountainous country with equal reluctance. My dear good brother still accompanied me on my way for a little distance. As I walked very quickly, I arrived already at 5 instead of at 6 o'clock at Schleiz, where I still had sufficient leisure to inspect, within and without, the residential town of the greatest German principality. It is ugly and intricately built, is extremely provincial, and, on the whole, gives the impression of anything rather than that of a princely residence. Only the small, but quite pleasant, castle is somewhat prettily situated on a hill, from which one obtains a wide view of the whole of the miserable little place, and over and beyond the next heights, toward the dear Ziegenrück mountains. How provincial are even the inhabitants of this residence, the frontier barriers of which are decorated with black, red and gold, I also experienced myself on this very evening. After I had sufficiently looked around, I searched in vain on the old wall of the castle for a moss or some other little plant that I could incorporate in my herbarium as a botanical souvenir of the principality of Schleiz. At last, my eye fell on an old well standing in a

small dark grotto in the middle of a semicircle of little stables, which were intended to represent the princely mews. From the outside nothing was to be observed; but inside, where the water was continually trickling into a small basin, a green moss seemed to float, at the sight of which I thought with longing: Oh, if this should turn out to be the *Conomitrium julianum!* This is at the same time one of the most beautiful and rarest German mosses, which hitherto has only been found in two wells, at Pirna and at Stuttgart. I had nearly to laugh at myself for the boldness of this wish. But who can describe my astonishment and my joyful surprise when I found the little green moss actually to be the plantlet I have mentioned above and which I have wished to find for a long time. (At least I believe I have recognized it with my naked eye with certainty, but it is only an examination under a microscope that can prove it absolutely, and this, unfortunately, I have not yet been able to undertake.) Naturally I did not lose a single moment in taking out my forceps and stuffing some of it into glasses and laying some on paper, as much as I could find of the charming little moss in the well. As this was not a great deal, I thought that perhaps I might find some more of it in another well in the town, and after I had searched nearly all of them I was favored by fortune at the last but one. Now when I repeated the same maneuver and carefully collected as much as possible of it in a bottle,

numerous children soon formed themselves in a circle around me, contemplating my strange behavior with astonishment. It was not long before groups of grown-up people also joined them, and in a short time nearly all the windows of the little market place were occupied with inquisitive people, who in the twilight contemplated my strange doings, and who delivered themselves of wonderful hypotheses which greatly amused me. "He is making a fool of the inquisitive ones," said some. "He is collecting healing herbs," said others, etc., etc. At last a few old women could not help asking me: "For what, in Heaven's name, can the green slime serve?" Whereupon, very seriously and in a mysterious manner, I explained to them that these herbs, pointing to a few other innocent water plants which were in the well, were the real and true herbs from which Frau Gräff (the quack doctor of Schleiz) prepared her elixir of life and her herb baths which cured all diseases. At first they did not feel inclined to believe me, but when I continued to pack up with all zeal, and then departed with my treasures, they made a rush upon the poor well, which they had soon completely denuded of all its herbs, except my moss, which, on account of its minuteness, had escaped their greedy hands. I wish them well of it! In any case, it will neither help nor harm the credulous people, more or less, than most of the other plants in our medical treasury. Perhaps even quite innocently I might be the means of healing

some sick people by inculcating a firm belief in *Veronica beccabunga*, *Nasturtium amphibium*, and a few other harmless little water plants! . . .

In all love your faithful

ERNST.

56. WÜRZBURG, *5. 5. 1855.*

DEAR PARENTS,

On the day before yesterday I received your letter, in which you announce to me the death of our dear good grandfather. The mournful news did not come to me unexpectedly. I had just been thinking very much about him during the previous days, and had been wishing him speedy relief from his terrible suffering. With anxious restlessness I had looked forward to a letter from you, because I believed surely that it would announce his death, which is so afflicting to us and yet so desirable for him. What a strange thing is the human heart! When one contemplates how, after a long life full of so much happiness, such ardent, fertile activity upon which he could happily look back with full consciousness to having ever employed as much as possible for the advancement of good, the last months of the life of this magnificent man still had in store for him so much pain and terrible suffering, when the frail terrestrial garment in which the immortal spirit is here confined had to embitter his life so much, one could only foster the silent desire that he would be delivered as quickly as

possible from this oppressive burden; and that was so particularly my wish that I often felt inclined to reproach God for having caused the magnificent old man to suffer so long and so painfully. And yet, now that he has actually been taken from us, I feel it to be a more severe and irreparable loss than I would ever have thought possible before! Grandfather was really ever the nucleus of the whole family, his house formed the center around which all individual, far-dispersed members always reassembled from time to time. As the venerable old progenitor, as the last surviving member of our forbears, he was the connecting link between the gray old past and the younger, weaker generation, before whose minds he shall stand for all their lives as the most dignified example and the truest pattern of a faithful German man and a real Christian, a man of few words but of all the more deeds. For me our magnificent grandfather will also ever be such a shining lodestar in the dark night of this poor miserable earthly life, during which we so often grope in the dark, stumble, and are often near to falling, and during which we so frequently and in so many ways wander astray. And if my weak and fickle character, which now possesses so little firmness and consistency, and which through vain doubts and anxieties is tossed about, now here and now there, is wavering to and fro, full of doubt and uncertainty, and knows not how and where to find and lay hold upon the right thing, then his

strong, manly character shall always serve me as a guiding and encouraging example, indicating how, filled with courage and hope, I shall steer the only and right course between the rocks on either hand. How torn and splintered the whole of the big family seems all at once to be, like the limbs of a body rudely dismembered, the head fallen and the rest having lost its cohesive unity. So, indeed, I believe that now the individual members of the family will more and more lose one another and become separated. The stem, in the center of which all had their stronghold, and in which they were united, has gone. However, may we, the closer members of the family, stick together the more fervently and the more firmly, and not loosen the ties that bind us together. Only now have I seen once more with my dear brother and sister what a great, magnificent happiness it is to know oneself to be united fervently in brotherly love with such dear good people. May God grant us his blessing, so that in our future lives the more we are separated from one another by external and internal circumstances all the more firmly may we build our trust on one another and confide fully in one another. . . .

Even now it gives me the greatest pleasure to think back upon my beautiful wanderings through the whole of the Ottergrund (on the 23. 4.). Rarely as on that magnificent day have I felt so fervently and deeply the immeasurable power with which I am chained inseparably to the miraculous con-

struction of organic nature, and how I have grown so intimately with it in all my thoughts and actions, feelings and imaginations. Whether it was the beautiful spring weather, or the awakening of young nature from the long winter's sleep (which has always had for me quite a special charm), or the profound loneliness of the wood in the wild rocky valley, through the midst of which the roaring mountain stream rushed down, undisturbed by any human sound, or, finally, the happy combination of all these and still several other factors, the fact remains that in thought I have rarely been so supremely happy, even in the midst of more beautiful nature, I have seldom felt myself in such deep, harmonious unity with my nature. My progress in natural science during the past year also essentially contributed to increase this sentiment. I was able to give an account of every living being, even the smallest, that I met; I could say what it was, or, at least, to what class, order, family, etc., of the inexhaustibly manifold animal kingdom it belonged. All the infinitely varying forms of plants which I came across were such familiar old acquaintances, of which also I knew more than their mere names. And exactly that which people despise and tread underfoot as contemptible, inferior dirt, the green slime on old wood lying in the water, the turbid foam on the surface of the mire, does not my microscope prove these things to be just the most magnificent and most marvelous

forms of creation? Never, by the way, have I missed my beloved microscope so painfully as in those days when the waters of the mountains offered me so much and such new material, animal and vegetable, for my microscope. So, thereupon, I took a solemn oath never, no matter how great the possible difficulty in the way, even on journeys, to let the dear companion of my life, which opens to me an infinitude of organic life where the unassisted eye sees nothing but rubbish and rottenness, out of my sight. By the way, I have even now found several highly interesting little animal and plant forms in the sludge I brought with me.

You can scarcely believe what certainty and confidence, what vital energy and consolation, the consciousness of this profound intimacy with nature instils in me. I could scarcely place another spiritual, even moral element by the side of it. Without this consolation, of which I am perfectly and firmly assured, I do not believe that I would be able to fulfill my intention of carrying through this study of medicine. I have deeply felt that during the last week (the first of my being here) when, indeed, I was practically on the edge of reverting completely into my old desperate condition of faintheartedness. In fact, I had not thought that the real attempt at the study of medicine would still be such a hard and bitter nut for me to crack. I will now spare you a description of the different desperate moods into which I fell again, especially

when I visited the clinics. You need only read my various former letters again (particularly the first ones), which I wrote to you from here regarding my study, my terrible abhorrence of practical medicine, etc., in order to form for yourselves a distinct picture of the "love and inclination" (?) with which I contemplate and work at the subject even now. Only one difference exists between then and now, but this, in any case, is too great a one. Then I abandoned myself, without any resistance, without any firm hold and will, to all kinds of desperate moods which the impressions of the moment awoke in me. Now I have at least established in myself the commencement of a proper serious will (thanks to the character-building intercourse with very many different people which I enjoyed last winter) and with the help of which (always growing with every victory over myself) I believe that, difficult as it might become, I shall succeed in carrying through the intention I have initiated. And that this is not an easy thing for me you might well believe. Now that quite suddenly I come completely into practical medicine, I really feel that as yet I know nothing at all about it, nor what it will mean to have to learn all this abominable, senseless, tedious, and yet, on the other hand, so difficult and responsible practical rubbish! One must, indeed, possess a good deal of courage (such as I have only recently acquired) if it were not to sink below zero. The first thing I had to do was

to take the firm resolution for the present (that is to say, for the next two years, by which time I shall have done with graduating, examination for the degree of doctor, and the State examination (!?), in short, to have finished the whole of the abominable, disgusting medical rubbish, and, as I hope, to be rid of it for ever and ever) completely to give up all serious geological and botanical studies, altogether the entire pure, beloved natural science and to be done with it finally, and to devote all my time solely and exclusively to abominable quackery. . . .

It is a great comfort to me that while at Ziegenrück I have read the first part of Goethe's life (till after his university years), where quite similar situations have taken place. Moreover, Goethe himself visited clinics in Strasburg simply for the purpose of getting accustomed to the sight, which was always most unpleasantly affecting him, of the frightful cases. Already for the same reason the attendance at the clinics, strictly carried through, will certainly not be without advantage to me also, although at the present moment it is still more distasteful to me than everything else. But, after all, I think that in the course of some weeks it might disappear. Goethe says: "It happens with everything as with the Merseburg beer: at first one recoils from it, and then one can no longer give it up!" This comfort, which is afforded by the force of habit, shall likewise encourage me. (By the way,

I have not even fainted at a great operation recently, as several of my colleagues did)! With regard to the clinics, lectures, etc., themselves, I shall tell you more in my next letter. . . . For the rest, preserve my letters well, because at the same time they are intended to become my diary. . . .

Hearty greetings from your old faithful

ERNST H.

57. WÜRZBURG, *Ascension Day, afternoon, 17. 5. 1855.*

MY DEAR PARENTS,

. . . I am getting on with the study of medicine much better than I could ever have hoped. In reality, I am now beginning to see that I have commenced the subject with terribly many prejudices and far too much anxiety. As a matter of fact, the useless fear of it during these long years has been quite superfluous. . . .

The hopeful thought of a future voyage into the tropics, as the goal of all my wishes and the real destination of my life, and the firm hope that my most ardently beloved nature will surely some day not forsake me, and that the richest satisfaction and the highest terrestrial enjoyment will arise from it, are sufficiently consoling me for the fact that for a few years I have seriously to turn myself away from my favorite inclination and occupy myself with other very different things which are lying quite apart from my character. This com-

forting thought of a more joyful future now gives me sufficient courage to bite bravely and freshly at the sour apple of Æsculapius, and the terrible specter of the State examination is a guaranty that I am doing this with due energy and endurance; sometimes even I conjure it up as a benevolently warning black apparition.

That all at once I have so quickly and easily reconciled myself to this necessity, and that, once convinced of it, I shall accept it with appropriate endurance, I owe solely to the conditions in which I am involved here. And these are, on the one hand, local courses and the really perfect way in which the different branches of medicine are uniformly and most harmoniously conducted here (in Berlin that would never have been possible, because not a single trace of this can be found there), and, on the other hand, the narrow circle of medical friends to whom I have already become quite accustomed here. In both respects I have found everything here as satisfactory as I could have wished. With regard, firstly, to the latter, it consists *me incluso*, of half a dozen men, of whom, again, each three are more closely associated together. The most excellent of them all is little Beckmann, who, together with Hein, is my chum. You might get Lachmann to tell you further details about this highly excellent and amiable young man, who in every respect can be an example to me, and in whom there is realized before my eyes the ideal of

a student and a man, as by right I myself should be. I shall also have much more to write to you about him in future. For the present only the one thing, namely, that he has the most beneficial influence over me, which even in the few weeks of our more intimate acquaintance I cannot too highly estimate (I made his acquaintance superficially in the winter of 1852–53). This my Mentor has exactly the same favorite inclinations as his obedient Telemachus (which in every possible way I shall endeavor to be); formerly he was an ardent botanist and zoölogist, as, indeed, comparative anatomy and physiology, the entire study of the normal organism, is his as well as my own favorite inclination; originally he also studied medicine from necessity (as he is quite a poor fellow!); but when he was once convinced that this was necessary, he made it his own with such thoroughness and energy that during the last winter here he was the first and best practitioner in the clinical hospital. Is not that an example very worthy of being imitated by me? He also hopes some day to adopt pure natural science alone as the profession of his life, but now, in order to provide himself with the ways and means to that end, he devotes himself very thoroughly and conscientiously to medicine. Moreover, he not only shows me an excellent example, but several times he has already explained to me in a very comprehensive manner the relation between natural science and medicine, and the real

value of the latter (which, indeed, in my partiality I have far too little appreciated) in such a way that I could completely fall in with his views. Above all, he pointed out to me, in which he is surely quite right, the high value that the exercise of practical medicine has for the development of the *general human side* of our mind, which hitherto I had neglected far too much. In another serious conversation he convinced me so much about the great partiality of the whole of my former way of thinking, that even on this account I made up my mind to make the attempt at once to study practical medicine, in order also myself to adopt this higher general standpoint regarding the perception of human life. Indeed, already the first weeks of my closer acquaintance with this magnificent and in every regard unequaled youth have had more influence upon my unbending mind than all the sermons of my other friends; my new friends, with whom I am daily almost continually associated in the lecture room as well as at table and in the evening, have endeavored as far as possible to make a man of me, and to round off my many rough corners and edges by benevolent, frank reproofs, in one word, to drive the Philistine out of me. . . .

If, thus, in regard to my closer association with others I have already had luck this time on my arrival (quite in contradiction to my former stay here, which on the whole was very secluded and restricted), I have also had more luck in regard to

the courses, which in all probability I could have found nowhere else more exactly suited to my present purpose. If I had remained in Berlin, there would not have been the slightest idea of my being all at once so far dragged into medicine as a whole as I have been here. Without mentioning the fact that in Berlin only quite a few professors (here and there) are suitable for beginners in medicine, one would now probably look in vain in any other German university for a medical faculty which shows theory and practice united in the most beautiful harmony, and for me, for whom science must be made at first tempting and acceptable, this is so extremely important. It is only through the fact that I take such a deep interest in theoretical medicine, which is surely represented here by Virchow more brilliantly, more scientifically and more intellectually than anywhere else, that I can be induced to devote myself to the practical side. In fact, up till now I have always had special luck in the selection of the place for my studies, in reality it being more a dark presentiment than a clear perception as to what would be offered to me that guided me to this place first in the winter of '52–'53, and last summer back again to Berlin. But never has this been more apparent to me than now, when I have to contemplate it really as the greatest good fortune for the carrying out of my next plan that I have just at the present time been wafted here again. Particulars about this I can only write to you later

when I have become still more familiar with Virchow. At present I can only tell you that the purely scientific direction (at first in pathological anatomy) in which Virchow, on the basis of the microscope, pursues medicine, the peculiar cellular pathology which he has created now (and in which he traces all morbid processes in the organism, as normal naturalists do, to the life of the *cells*—for me the most powerful word!) is in the highest degree attractive to me, as I would never have guessed in the smallest measure that it would be; for when at that time I followed his theoretical course I did not yet understand him at all. I owe it chiefly to these highly intellectual Virchow courses that it has become possible for me to tear myself away for a time from my botanico-zoölogical studies and throw myself into medicine with all the strength at my disposal. . . .

Three times a week, from 11 to 1, there is a course which compensates me completely for all "practical" tortures, and which I must reckon among the best and most instructive ones I have ever heard. This is the celebrated *privatissimum* with Virchow: demonstrative course of pathological anatomy and microscopy—30 to 40 of us sit at two long tables down the middle of which in a groove runs a little railway on which the microscopes are rolling on wheels, and they can be pushed along from one to another. Thus one often has the opportunity in one hour of seeing the most peculiar

and most rare pathological preparations, carefully arranged for the microscope in great quantities, while Virchow meanwhile delivers his quite excellent lecture (naturally adapted to the material from the clinics which is just at hand). These usually put in the clearest light the diseases which one has previously observed in the clinics in the living subject, as is also the case with the lectures which are given alternately with Virchow's course, in which he sometimes makes his pupils undertake the post-mortem examination themselves. It is just this connection between the clinico-pathological, anatomical and microscopical condition in which the disease is found, which one thus obtains in the clearest and most convenient way as a complete comprehensive picture of the disease, which is exceedingly interesting, instructive and important. And one may seek in vain for such a thing in Berlin, where there is no question of pathological anatomy! That is only to be found here! How much I learn every time in this course I can scarcely estimate highly enough myself. Altogether daily I acquire here such a quantity of quite new, unaccustomed knowledge (unfortunately enough, partly very repulsive to me) that I often feel quite giddy and have to take all possible care not to become confused. It is almost too much. On the three days when from 11 to 1 I have no course with Virchow, I skip the lecture on the history of development with Kölliker, because I have already

heard it once and have almost completely mastered it. It is only the extraordinary interest of these indisputably most attractive and most important of all organic natural sciences on which the whole of the new comparative anatomy is based, as well as the extraordinarily clear and morphologically perspicuous delivery of Kölliker, accompanied by fine drawings, which have caused me once again to follow the exposition of these subjects which I know almost by heart. . . .

Now, from 4 to 5, there comes the theoretical course of Virchow's on special pathological anatomy, which, although not superlatively wonderful, is nevertheless very good, appealing and instructive. Virchow's delivery is not very fluent or smooth, but fresh, compact, and distinguished by a peculiarly higher and general standpoint from which he contemplates everything, thus making the driest, most minute details attractive. Besides that, he is often exceedingly witty, whereby he amuses us very much. For instance, a few days ago he began his lecture thus: "Gentlemen! First of all you see here the important skull of a guardian of the general and public peace (that is to say, a night watchman), with a powerful blow on it which this noble citizen of the State received in the execution of his sentimental and contemplative calling. As, fortunately, he left the healing of the very deep wound which reached the brain simply in the hands of Mother Nature, it healed very well.

But two years afterward he was foolish enough, when he had caught a slight cold, to confide himself for its cure to a *medicus practicus*, through whose treatment according to the rules of art he very happily departed this life," etc., etc. At 5 o'clock the series of courses, which, with one hour's interruption at midday, lasts from 7 in the morning, is happily over. But on two days, from 5 to 7 o'clock, I have still taken up with my acquaintances an "experimental course in physiology," with Professors Kölliker and Heinrich Müller, in reality a lecture I only attend as a matter of form. I cannot say that one learns much from it, as neither is an experimentalist or a physiologist (in the proper sense). However, one can converse with people about all sorts of things, and can also learn some skill in the performance of physiological experiments. . . .

58. WÜRZBURG, *3. 6. 1855.*

MY DEAR PARENTS,

Yesterday evening I received your dear letter inclosing the obituary account about grandfather, which has pleased me very much. But I wish, dear father, that you would have entered somewhat more into details, and that in addition you would have somewhat more emphasized his merits with regard to the State, and his magnificent character, also, specially, his amiable simplicity as a private man, as well as the admirable wealth of his

knowledge of all kinds, and would perhaps have illustrated it by exhaustive particulars concerning his rich life, which are so numerous and so interesting. I must admit that the space at your disposal was far too limited for such a detailed characterization. But I hope that you will not abandon the idea of putting together at a later date a more detailed character picture, a proper biography of this unique man. In our weak and degenerate times, with the general indifference and lack of character, the punctiliousness and the self-interestedness, which reign everywhere, it is doubly necessary that such majestic and sublime examples of the most recent time are brought plainly and vividly before the eyes of the coming generation, so that they can learn from them and improve their minds. How few of such excellent characters as grandfather's are there now, and how much in need are we of them at the present time!

Regarding my doings and happenings during the last few weeks, I have, first of all, to tell you of my Whitsun journey, which passed off very well, although in quite another way and manner than I had expected. It did not happen at all like the zoölogico-botanical, naturalist, pedestrian excursion I had always been accustomed to make with the greatest possible delight in nature, but a real so-called *Studentenspritze* (students' rambling excursion) such as I had never made before and, at the same time, as I hope never to make again. For,

although this time I was very merry and jolly and, indeed, for once made the acquaintance of a real student's idle wandering, and had taken part in it myself, nevertheless this one tour has satisfied me once and for all, and I never wish to find myself again in the position of having to undergo one like it (of which, I may say incidentally, there is no prospect). Such a way of traveling might correspond well enough to the minds and the views of other students; but with my way of enjoying and exploiting nature this one is altogether uncongenial, and on this occasion I had from the very beginning to give up all my wishes and plans, in order to put myself within even the possibility of being able to stand such a wild jaunt for the whole length of four days. While I was always accustomed in my walking tours to make the acquaintance as exactly as possible in all its entirety of the nature of the landscape I wandered through, even setting aside altogether my special hobbies, botanical and zoölogical, to look out at least for the most beautiful districts, before anything else to take in the whole surroundings, sketch from nature, etc., this time there was no question of anything at all like that. Here not even the inspection of the most interesting vantage points or the lovely woods and mountains, etc., was the governing idea, but only the best beer and the best wine, and if they succeeded in getting enough of these they were quite content, and only when these higher enjoyments were abun-

dantly at their disposal could they perchance see, as a secondary attraction, the beauties of the surrounding country; but even these were only visited if the distance was not too great or too fatiguing. While I had always made it my chief consideration in my wanderings to walk till I was tired out; throughout the day to eat as simply and as little as possible and to drink still less; now we always trudged evenly and smoothly, step after step, along the highroad. Every inn we came to, where "the good God had stretched out his arm," we had to enter and tap. Thereby the rest was twice as long as the walk. You can imagine that one does not go far with such a way of traveling, and that it was not the cheapest method is just as clear. If I had been traveling alone I would have done the entire distance, that took us four days to cover, in one or, at the utmost, in two, quite comfortably, and on about a fourth part of the money. Besides, I would still have reveled to my heart's content in hay and beasts, would have sketched from nature, etc., all of which I only ventured to do quite clandestinely and slyly. Naturally this whole manner of traveling, which my acquaintances described as being the only true and comfortable one, appeared to me to be highly uncomfortable and senseless. Indeed, I shall never again submit to such compulsion. But, in spite of this, I have amused myself as much as possible, for, guessing already in advance that things would happen like this, and immediately

surrendering from the very beginning my entire individuality with its special inclinations and views, I had firmly made up my mind to subject myself for once completely to the majority (against which, as the only representative of the minority, I could not stand up), and to do as the others did. Thus, then, also this wild wandering tour has, although not in the usual way, been of great service to me, and I have rounded off many a sharp edge of my stiff character, and have learned how to accommodate myself to the sense and the wishes of people who think quite differently from me, which probably I shall often have to do. But, altogether apart from the fact that I have learned to adapt myself to some extent to other heads and to resign my self-will, I have derived much profit from seeing for once quite a different manner of enjoying life (which, I must admit, does not please me at all), and have personally made the acquaintance of a totally different way of contemplating life. In any case, I have thereby completely satisfied my old desire to make once in my life a real *Studentenspritze*. . . . But, however, I must not do wrong to my acquaintances; I must put their merits in a proper light. For that which they spoiled (at least for me) through their eternal guzzling they partly made up for very abundantly by an immense number of sparkling jokes and an inexhaustible wealth of merry pranks and jolly freaks, so that we scarcely ceased laughing and bantering one another

the whole day long, one always trying to surpass the other, whereby sometimes the jokes really became not a little peppery. I was always reminded of the words of Mephistopheles: "Before all things, I must introduce you to merry company, so that you may see how easy it is to live and to let live." . . .

[The excursion described in detail by Ernst Haeckel, which took place on foot, by carriage, ship and railway, went *via* Wertheim, Stadtprozelten, Freudenberg, Miltenberg to Amorbach, and returned *via* Miltenberg and Aschaffenburg to Würzburg.]

On the whole, during the Whitsun trip, imperfect, according to my idea, as it may have been (and how much more profit and enjoyment I could have had from it if I had traveled alone!), I have nevertheless seen rather much, have amused myself very well, as far as that was possible, and have for once been "jolly" in the true student's sense of the word. To compensate for that the lectures tasted all the better afterward, and I am already quite in my old trim again. . . .

Before you go to Ziegenrück I would still like to ask you to buy me several things, which you, dear father, can bring here with you. I would ask you to order for me at Dietrich Reimer's the *first, third* and *fourth* volumes of A. Schaubach's *Die Deutschen Alpen* (The German Alps), Jena, 1846, if they can be obtained separately; otherwise the entire work,

which consists of five volumes, of which each (reduced) costs 1 gulden. It is quite an excellent work and absolutely indispensable for a *scientific* Alpine journey, as Richthofen can, if necessary, confirm. But I would like to ask you to order it immediately, so that you can bring it with you. . . .

59. WÜRZBURG, *17. 6. 1855.*

DEAR PARENTS,

. . . I am immensely happy, dear father and brother, about your approaching visit; then for once I shall be able to pour out fully my overflowing heart. For, as yet it has rarely been as full as it is now, and at the present moment I have not a single man here in whom I could or would like to confide. The chief cause is, that during the last weeks a very important and, as I hope, very favorable conversion and change in my special views of life have taken place. This metamorphosis chiefly concerns my former highly one-sided and prejudiced view of the study of medicine, to which—thanks to the incomparable lectures of Virchow, and the good clinical course of Bamberger —I am now rather fully reconciled, at least so far that I shall now certainly carry it through, and even with a certain amount of interest, from the beginning to the end. I hope you are not less glad about this than I am myself. Thereby my whole inner being has really experienced an essentially quieting change. What a great comfort it

is if one has before one's eyes a distinct and definite aim, to the attainment of which one can work with all one's strength and in tranquillity. Certainly I shall not fail to employ all my strength for that purpose, especially as in the meantime there will always hover before my eyes in the background, as the most magnificent reward of all my trouble, the palm of a voyage for natural scientific purposes into the tropical seas, which I dare hope only by this means to realize as the crown of all my terrestrial desires. But certainly it is quite another question concerning the requisite tranquillity, and the more I try to obtain it the more unquiet and stormy becomes the wild and violent struggle in my breast between the contradictory and rivaling thoughts and efforts. In particular, it is the old well-known story which torments me now more horribly than ever, namely the want of time. How much would I like to make all the numerous sciences and arts, upon the whole agglomeration of which natural science (in which I also include medicine as a practical branch) is built up, seriously and thoroughly my own; and yet these extremely scarce and scanty hours are hardly sufficient for me to grasp the very least and superficial of all, and not even a single one in anything approaching to completeness. When the truth of this terrible thought seizes me, as is naturally daily the case now, then every time, despairing and cursing the insufficient limit of my strength, I feel

inclined to throw it all up. What on earth shall I do now when day after day, from early at 7 o'clock till the evening at 7 (with only one, at the utmost two hours' interruption) I am fettered to courses (mostly only practical ones, which do not require so much strength and activity of mind as the theoretical lectures)? . . .

My anxiety about courses, which I already described to you the other day, has become still more intense from the fact that, although supplementary but very much desired and really a pure recreation for me after the medical fatigues of the day, a zoötomical preparation course has been arranged for twice a week, in the evening from 5 till 7 o'clock, in which I, together with seven others, mostly very nice men, learn how to dissect the lower vertebrate animals, under my special helpers and friends, the two privat docents of zoölogy and comparative anatomy, Drs. *Leydig* and *Gegenbaur*. (I must admit that it is scarcely anything but a repetition for me, but in which, nevertheless, I learn many nice little manipulations). . . .

Even the only two week days which I had still free in the evening, from 5 till 7 o'clock, have now been filled by Kölliker having opened to me the museum of comparative anatomy in a most obliging (and for him nearly incomprehensibly liberal) manner. Now I am allowed at any time to fetch the key from him and then to inspect all the preparations as much as I choose. Even the cupboards,

with the very interesting and instructive preparations in spirits, are open to me, and I am allowed to look at them, at least from the outside (which I could not do in Berlin, even with Müller, who only placed the skeletons, etc., at my disposal). That I cannot allow such a magnificent, favorable opportunity of seeing so many strange and curious things (which in natural science is really the main thing, as here the personal conception surpasses everything) to escape me, you might imagine. But strange! While formerly, and especially during the last term, this inspection of the highly interesting zoölogical preparations would have afforded me the greatest enjoyment, it is now mingled with such a bitter flavor that I cannot rejoice at the wonders of nature with all my heart. I am in absolute need of tranquillity, without which such enjoyment is impossible. How shall I find the time for a thorough study of the collection, or even only for one thorough intelligent inspection of all the things! Even the few hours I can devote to it appear to me to be ill spent, and to have been robbed from the necessary medical study. The same thing happens to me with microscopy, for which likewise I can no longer find the necessary tranquillity. It is really as though an evil spirit had seized hold of me, spurring me without rest or repose to devote myself solely to medicine, in obedience to the call of duty. In any case, it is quite well that I am driven from morning till evening into the courses, so that, after

all, no free time is left to me. But, from every point of view, in the long run this is an extremely uncomfortable and really insupportable existence. I believe that I shall never be able to obtain tranquillity, for it is just the restless striving onward that is my life. . . .

But it is only to a small extent that the conditions just discussed above, particularly the terrible want of time, make my present life appear to me to be so very uncomfortable, although in many directions it has taken such a favorable shape, especially in regard to strengthening me for my next task in life. Above all, I am in sore need of a friend to whom I could pour out my whole heart and who would understand me thoroughly. Now I begin gradually to abandon the hope that I shall find such a one. For three years now, since my student days began, I have searched for him in vain. I have made acquaintances enough, some of them very nice and amiable ones. Yes, what is generally called "a good friend" I have found in numbers. I have not a few friends who make all my special favorite occupations their own as well; others, although not many, who also share to some extent my general human, my moral, and my religious views; still others, with whom I very much like to spend the hours of leisure in my daily life—but I completely miss a real friend who would unite all this in himself, in all possible directions, however much he might otherwise differ from me in temper-

ament and individuality, who would at least share the same fundamental views and principles; and it is only such a one whom I could "press heart to heart and soul to soul!" I must really be a strange and abnormal herb, that I am quite unable to find a congenial contemporary. I must admit that I might still have very many idealistic and false views of the world, of life and its tasks, quite irrespective of all individual peculiarities, which are no doubt to some extent very unpleasant and repulsive, but to discard which I am now always endeavoring more and more. However, on the whole, I believe that I have perceived this task rightly and truly in the manner that you, dear parents, and also you, my dear brother, know me to have done, and I hope the more I go out into the world to rub off and discard the individual errors and peculiarities which are still often ruling in me, for which also a little practice in medicine will surely be very helpful to me. And yet among my friends I can only find a few who understand their life tasks in the same way. I believe that I still harmonize most with noble, excellent Richthofen, the acquaintance of whom I have unfortunately far too much neglected during this winter in Berlin. Next to him would probably come Weiss and Lachmann. Here I believed that I had found such a friend in Beckmann, and in some respects this is the case. I am all the more sorry to have discovered, as our acquaintance developed, some fundamental differ-

ences in our views of life which exclude a complete assimilation of them. I would not write so much to you in detail of all these circumstances if, especially during the last week, they would not have so extraordinarily occupied me and even shaken me to my depths, often really for hours have distracted me from all other thoughts. . . .

The other day I had a very serious talk for several hours with Beckmann, with whom, in general, I harmonize very excellently, during which we exchanged our general fundamental views in regard to natural philosophy, nature itself, finally, also about the life of the soul, immortality, etc. Gradually it appeared that concerning the latter points, namely, about God, immortality, the life of the soul, etc., Beckmann had quite different conceptions from my own. My views on these subjects you, dear father, know, as you yourself almost entirely share them. Here, however, Beckmann assumes quite a different standpoint, which surely is shared by the overwhelming majority of young naturalists, namely, the purely materialistic and rationalistic ones, which, for instance, Burmeister represents in the purest and most noble way, and which you, dear father, have till recently found expressed completely and distinctly in its characteristic features in Karl Vogt's pamphlet *Köhlerglauben und Wissenschaft* (Blind Faith and Science). As you will remember, the characteristic features of this pure intellectual conception of things con-

sist in the activity of the soul being contemplated solely as a function of the nerve substance in the brain and the spinal marrow, that, therefore, an independent invisible soul exists as little as an immortality, as a God. The place of the latter is filled by a blind, unconscious necessity of nature, to which we, as well as all matter, which in itself is of equal value, are all subject. According to this conception, faith exists naturally as little as does religion. They only exist in order to hold in check and keep together the great uneducated mass of mankind. The naturalists alone are called upon to unveil the truth for themselves, to recognize matter as the only factor governing the world according to distinct, blind, unalterable laws of nature. The further consequences result from these principles automatically. For the rest, I shall discuss this verbally more in detail. On the whole, I was not very much surprised to find this distinctly materialistic and rationalistic view in Beckmann, because, as I have already said, by far the preponderating majority of young naturalists and medical men embrace it completely (as I know from my own three years' experience), and because it is represented by a section of the shining lights in modern natural science, but, above all, by Karl Vogt, Burmeister and Virchow, while most of the others, and especially A. v. Humboldt and Johannes Müller, observe a complete and mysterious silence about this cardinal point. As far as I have now

grasped natural science in its depths, I can also completely explain in my own way (on the basis of the absolutely exact, purely empiric new natural science, in which the inductive method founded on the empiric, that is to say, on experiment and observation, induction and analogy, is everything, in which it is the principle and the first task of all research to trace the fact of the marvelous terrestrial nature to distinct, unalterable, chemical and physical laws) how those people have come to this conclusion through that pure intellectual conception of things. The chief mistake of this whole tendency, which, moreover, is highly important and fertile at the present time for the construction of the young natural science as one founded on exact empiricism, although it must crumble to pieces later on, according to my opinion, is, as far as I can see, that it tries to explain and make use of chemico-physical laws where they are no longer operative, and, also, where there is nothing more to be explained, namely, in the sphere of the spiritual, where faith takes the place of intellect and knowledge, the subjective conviction of things, of which the senses can no longer convince us. But, because it cannot perceive it by means of the senses, it denies this entire sphere. For my part, I am firmly convinced that both spheres, namely, knowledge of the sensible and faith in the supersensible do not exclude each other, as the others pretend, but that, on the contrary, they supplement

each other for a perfect conception of the world, that one ends where the other begins. Likewise, as I have said, I understand very well how those purely rationally material naturalists arrive at this undue extension of intellectual research into spheres to which it no longer belongs; but, for my part, however, I do not understand how one can live in this conviction. Least of all, I do not understand how, holding it, one can be a noble and good man as those, indeed, are. Beckmann, apart from these purely material views of life, is (in the most noble sense of the word!) the best and noblest man you can imagine. I would like to say that his whole life, by its appearing to me governed throughout according to the laws of the same Christianity which as a confession he denies, belies this pantheistic conception. In all his thoughts and actions, Beckmann is as pure, moral, good, noble, as only the best Christian could be. He is beloved here by all, by professors and students alike, as an example of a capable, diligent, clever, amiable, strictly moral man. (One can, moreover, say the same, although with certain reservations, of his teacher Virchow, who has indisputably exercised an important influence upon him.) Beckmann, with all his rationalism is a man who is a hundred—nay, a thousand—times better and more perfect than with my Christian convictions I am, so that in every other direction I must only try to emulate his excellent example. How

highly must one esteem such a character! This is just for me the most incomprehensible thing about it. For myself, I confess openly that if I would hold this materialistic view of my life I would not be able to lead such a life or to stand it. If I had not the firmest conviction of an independent soul, in its nature distinct from this body, not inseparably bound to it, of a God preserving the whole world and guiding our destinies, of a better future spiritual life, I would long ago have shared the fate of unhappy young Ribbeck, of whose voluntary death you wrote to me in your last letter, and would just as voluntarily have put an end to this terrestrial life, which, in spite of all earthly and spiritual pleasures and enjoyments, is so extremely incomplete and faulty, and which, just through this faultiness and poverty, embitters in every respect all pure and true enjoyment, and which, on the whole, leaves you so greatly dissatisfied and empty. I would then, perhaps, have followed the example of those miserable ones to whom the greatest number of the materialists belong, and as I can also count them by the dozen among my contemporaries, especially among the medical men, who, likewise, do not want to know anything about religion, faith, soul, but to whom the pure and moral, so-to-say humane striving of those nobler, more refined rationalists, to whom Beckmann belongs, is lacking, and whose only principle consists in not doing as much as possible in this life (for which

the latter are striving), but only and solely enjoy it to the fullest extent. All their thoughts and actions are directed toward procuring themselves as much pleasure as they can, whether the latter be more refined or more gross, more sensual or more spiritual. This principle governs all their actions, and alone is capable of moving them to effort. How empty and miserable inwardly must the great crowd of such people feel! No, then, rather quickly cut this wretched thread of life which leads to imperfection, and subside into the eternal nothing. That I stand this life, that I, having ever in view a perfect beyond, strive to use this life as far as possible for the training and perfecting of my immortal soul, I owe only to Christianity, to its divine, deep truth, which has been opened and made intelligible to me by you, dear parents, as well as by my excellent Merseburg teachers, in particular Simon, for which I cannot thank God enough. . . .

I would not have written so explicitly to you about all these views and thoughts if they would not have deeply shaken me and occupied me just during the last weeks, especially since that serious talk with Beckmann. I am far from finding fault with Beckmann for his opposite views, to which a purely rational contemplation of things must necessarily lead him. Yes, when I contemplate the despicable, and certainly most objectionable, hypocritical sanctimoniousness of our puritanical, ortho-

dox ultramontanes, with their highly un-Christian and exclusively clerical haughtiness, when I think of the little better senseless, hierarchical bigotry, the sham religion of the Catholic Church, which daily confronts us here in the most unmitigated, most offensive, most undignified form (as only a short time ago in the extremest manner during the procession on Corpus Christi Day, which, in reality, was nothing short of glorified idolatry), then I can only too well understand how just the most noble, those who are most freed from egosim, the most educated souls are turning away with abhorrence from that caricature of the Christian religion, and rather fall into the opposite extreme. . . .

Your faithful ERNST.

60. WÜRZBURG, *27. 6. 1855.*

MY DEAREST MOTHER,

This time also, as was the case two years ago when I passed the first summer here, I can only send you my most fervent greetings and the heartiest congratulations on your birthday from afar. How happy would it have made me if I could have been at Ziegenrück on the 1st July, and have told you with a single fervent kiss and pressure of the hand all that I feel in my heart for you, and which cannot be expressed in a letter, no matter in however many words. But you know, my most heartily loved little mother, how closely our souls have become entwined and how our hearts are united,

and the consciousness of the faithful inner understanding comforts and consoles me for the great want I experience in being so far from you. At all events, we are always together in spirit, and this fervent spiritual communion with you, dear parents, is my heartiest joy and my greatest comfort, and permits me to labor with twofold joyfulness and confidence in my life's task which has been allotted to me. . . .

That I have now finally discovered a sure, distinct aim, for which I can work, to the attainment of which I can direct all my forces, and upon which I can concentrate myself, it is a great comfort to me, and gives me much more courage, hope and self-confidence, so that I can look forward to the life lying open before me with much joyful, hopeful pleasure to do something and to make the best use of my talents. I must admit that even now, in fact frequently, very weak and faint-hearted hours are overtaking me, in which the "how," the way, and the manner of the execution of my plan of life appear to me to be very shadowy and uncertain. But if, according to my strength, I endeavor to fulfill my part, then I believe that also the blessing of God will not be denied to me and that in the end I shall find a sphere of activity suited to my capabilities. . . .

But I can just as firmly promise you, as I hope to give you happiness by the fulfillment of this resolution, that for my part I will not fail to estab-

lish myself in the place allotted to me in this life. . . .

28. 6. 1855.

I could not finish this letter yesterday evening, because we six acquaintances held the first meeting of our "Humanly-scientific" Society, which is now to meet twice a week. On one of the evenings a short paper will be read about one of the different branches of medicine and natural science, which will be followed by discussions about the essay (I have been allotted as my subject microscopic and comparative anatomy and the history of development); on another evening one of the half dozen will deliver a speech about some general human subject, which will then be followed by detailed discussions and debates on these general views and principles. I like the whole idea of these meetings, and I am convinced that such discussions will be very instructive. But it is another question as to whether we shall be able to carry through the last-mentioned general human debates, as the individual views in the six heads are far too wide apart and seem to disagree still more than I had previously feared they would. Already yesterday evening these differences were extremely apparent. Hein opened the meeting with a lecture on the duties and the relations of the doctor (toward his patients and his colleagues). Naturally there followed a lively discussion concerning a number of general principles and views of life which had arisen, and then it was

discovered that even the most elementary ideas, such as "duty, morality, conscience," etc., were understood by each one of us in quite a different manner, out of which there arose a violent dispute that lasted till after midnight and which ended in each being still more strengthened in his own opinion. Nevertheless, I believe that such discussions are very instructive. One learns to represent clearly one's own views and to support them, and to refute those held by others, and it is sure that one considerably enlarges one's knowledge of the latter, namely, the knowledge of men. On another occasion I shall write more explicitly about this, as perhaps it might interest you, and I shall now only remark that I and Bucheister took up the most diagonally opposite points of view (as is generally the case in the whole of our intercourse), and that for this reason we have always been opposing each other rather violently and not with becoming calmness. He is supported by Strube, while my first supporter is Braune; Hein and Beckmann take up a central position as mediating elements. I am really very anxious to know what will be the end of the story. But yesterday evening my rationalistic friends really appeared to me like kittens trying to bite their tails and in their effort to do so always turning round in a circle. They speak with zeal and consistency against Christianity, and against religion, and against faith altogether, and yet in their whole better and nobler parts stand so entirely

under their influence that in all their words and actions they are guided by them unconsciously and so to say, blindly. Yet more of this anon. . . .

Your old and faithful ERNST H.

61. WÜRZBURG, *1. 8. 1855.*

DEAREST MOTHER,

. . . The week that is still left to me I shall thoroughly employ in making myself somewhat familiar with the physical geography of the Alps. That I am looking forward immensely to this Alpine journey and that already during the last few weeks it has been pressing all other studies into the background surely I need not tell you. I have only still to ask you not to have any uneasiness or anxiety about myself. As, through your incomparable generosity, I have received much more money than I shall need for this splendid journey, I can undertake it thoroughly *con amore* and with all the ease and comfort I shall require. As I shall drag my luggage along with me all the time, I shall always take a guide everywhere when I do not follow the main roads or unmistakable public roads, and therefore you can be completely at ease and free from anxiety. The letters that I shall write to you from the Alps will, on account of pressure of time, presumably be very short, and only convey to you the most important news. I shall then describe the lovely journey to you in all the more details in the diary I shall write up afterward.

Now, farewell, my cordially loved mother. Be very happy, especially when you think of your boy who is reveling in the paradise of nature, and accept once more a thousand thanks for all your faithful love,

Your old faithful ERNST.

62. HALLSTATT, *Saturday, 18. 8. 1855.*

DEAREST PARENTS,

I have been in the Alps since the day before yesterday! From then the whole of my life has actually been nothing but one gigantic note of exclamation! For what can be said about this extraordinarily magnificent nature, which is still far, far more beautiful and sublime than I had anticipated, although on the whole I had made myself rather an accurate picture of it! In reality I ought to write down for you a whole series of interjections and expressions of admiration, such as: magnificent, glorious, divine, etc., etc., in order to express my joy to you. And all this in spite of the most miserably rainy weather, which drives all the travelers except myself to despair. But, nevertheless, I see enough of the splendor, and collect treasures of the most wonderful little Alpine plants. In other respects, including the walking, I am all right. To-day, so that you may get some news from me, I shall only send this letter off without a lengthy description of the journey. In half an hour I intend to continue my way.

Wednesday, 15. 8., in the early morning from Linz by rail to Gmunden. Left the train at Lambach, and inspected the magnificent Traun falls. Then by boat from beautiful Gmunden to Traunsee; the most extraordinarily green water. Walked in the afternoon from Ebersee to Ischl, with six students from Prague, quite nice fellows. Passed the night at Ischl.

Thursday, 16. 8. Walked in incessant rain from Ischl to this place. From Steg, where the lake begins, nearly to the Rudolf's tower, always by the side of the salt-water pipes high up on the side of the mountain on the magnificent steep bank. Many waterfalls. At last, the great Mühlbach!

Friday, 17. 8. Yesterday inspected the local salt refineries, then the Kesseler and Hirsch wells. In the afternoon, with the six Prague students, to the waterfalls of the Waldbachstrub, which have become quite magnificent on account of the uninterrupted rainfall. From here the others returned. I still made a very magnificent excursion alone into the wild forest as far as the source of the Waldbach and to the Klausen falls. Quite enchanted with the magnificence of the natural beauties! This morning I intend to go to Gosau. From there in two days to Salzburg. . . . On one of the next days I shall send you a parcel of plants. Later on you shall hear more in detail about me. Now I am in haste.

In faithful love, your old, perfectly happy,

ERNST.

63. BERCHTESGADEN, *Friday, 24. 8. 1855.*

DEAREST PARENTS,

Since I first wrote to you from Hallstatt, I have continually had the most splendid weather, and have made the most beautiful excursions. But there is really too much gathered together here of all that is beautiful and magnificent in nature. One superb and enchanting enjoyment follows another, so that it is impossible to arrive at a tranquil and perfect state of gratification. I would now like to come to a halt once every week, so that I can digest these grandeurs. But now I want quickly to give you a mere survey of my route.

Saturday, 18. 8., from Hallstatt to Gosau, to the lakes there.

Sunday, 19. 8., for the first time on a real Alp, the Zwieselalp, with a guide. Extraordinarily magnificent panorama of the entire northeastern part of the Alpine chain. Magnificent snow-fields on the horizon all around. A quantity of Alpine plants.

20. 8. Walked from Abtenau to Golling. Magnificent waterfall there. In the afternoon by stage-coach to Salzburg.

21. 8. At Salzburg! Perfect paradise! Quite magnificent town. In the morning Mönchsberg, and all its curiosities. In the afternoon the Kapuzinerberg, Leopoldskron, etc.

22. 8. In the morning once again to the Mönchsberg and to the fort of Hohensalzburg, with mag-

nificent panorama. In the afternoon by stage-coach to Berchtesgaden.

Thursday, 23. 8. Yesterday, accompanied by a farmer from Holstein, to the Königssee, exceedingly magnificent, much frequented, then mounted for three hours to the Holzeralp. Magnificent view.

Till now I have generally had very nice companions, particularly at Salzburg three schoolboys from Carinthia, splendid children of nature from the mountains, for whom I have really formed quite an affection: then at Gosau three rather stout, fat-bellied, bumptious, real "Viennese" Philistines, who have amused me extraordinarily! It is altogether very amusing to find what very different kinds of people one meets when traveling. How differently life exhibits itself to different brains!

64. RAMSAU, *Saturday evening, 25. 8. 1855.*

DEAREST PARENTS,

As I have just found a favorable opportunity of sending the first parcel of plants, which has been ready for a long time to be sent off, to the post-office at Berchtesgaden. I could not finish the letter I had begun, could not even wind it up, or give you a *poste restante* address for the next letters.

GASTEIN, *Monday, 27. 8. 1855.*

As I had finished writing these last words I fell asleep from sheer fatigue. The reason for this was that the day before yesterday I climbed up the

Watzmann, the loftiest Alpine summit in Bavaria, 9,058 ft. high, and I did so in the most magnificent weather, and with the greatest happiness. Most of the plants in the parcel are from there. Yesterday morning, when I had left Ramsau, quite unexpectedly I met my dear old Würzburg friend Brunnenstädt, with whom I walked for the whole of the day, viâ Hirschbichl (Bavarian frontier pass) and Saalfelden, to Zell. The Pinzgau is also quite magnificent and quite peculiar. Unfortunately to-day we had to separate again so soon, because he went straight on to the Tyrol. I walked from Zell am See, viâ Tarenbach and Land, to this place: another excellent excursion in which I passed for the first time from the Kalkalpen to the primary rock. I have now sufficiently enjoyed waterfalls, lakes, and Kalkalpen landscapes in the most various ways. Now comes the turn of the higher, primary mountain world, with the snowy regions . . .

Meanwhile you will probably have received the parcel sent from Berchtesgaden, and you, dear little mother, might be so kind as to continue to dry the plants, even if they should already have partly become mouldy. Spare no amount of blotting-paper. The mosses you can dry in the air as they are. At the same time I also sent some extra specimens, and in addition a little souvenir from Berchtesgaden for each of you: for you, dear mother, the salad spoons, for father the napkin ring, for Karl the paper knife, for Mimi the little

Swiss châlet, for me the salt crystals, as a souvenir of the Berchtesgaden salt mine which I descended.

In any case, from the 26 Alpine views you can form to some extent for yourself an idea of my magnificent enjoyment of nature, and accompany me in thought on my journey. It agrees with me excellently well, both bodily and mentally. I feel more fresh and happy than I have ever felt before. Also my feet, as well as the knee and the soles of my feet, are behaving excellently. But enough for to-day. I must be off at once. I hope to find a letter from you the day after to-morrow at Heiligenblut. The next after that in a week's time at Meran.

With the heartiest greetings, also to all friends,

Your faithful ERNST.

65. INDISCH-MATREI, *2. 9. 1855.*

DEAR PARENTS,

I hope you have received my last letter from Hofgastein, as well as the consignment of plants from Berchtesgaden (or rather Ramsau). . . .Meanwhile I have been getting on very well, in every respect, with regard to the journey in general, the weather, the company, the plants, the legs, etc., etc.

Tuesday, 28. 8., I went early from Hofgastein to Wildbadgastein, where I had a look around, then with Dr. med. Fürstenberg, of Vienna, viâ the waterfalls, to Nassfeld and then alone without a guide or carrier, with all my luggage, in particular richly laden with hay, crossed the central chain of

the Alps, over the Nassfeld Tauern, whence I arrived in the evening extremely fatigued, but very happy, at Malwitz. On the 29. 8., with guide, to Fragant, over the 7000-ft. high ridge of the Schober to Döllach (all in Carinthia). Then on the 30. 8. early to Heiligenblut (quite magnificent!). In the afternoon with a Vienna hyper-Philistine to the Fleiss. 31. 8., with Hofmann, of Bamberg, a Lyceum professor of natural history, from Heiligenblut, viâ the highest part of the Möll valley, to the Pasterzen glacier and then on to the Johannshütte and Gamsgrube, the most celebrated botanical *locus classicus*. Simply reveled there in the rarest little glacier plants, facing the glacier itself and the most magnificent Grossglockner. Then back. Yesterday, the 1. 9. 1855, in the early morning at 4 o'clock with Mr. Anderson, of London, an English lawyer sixty years of age, a very nice man, climbed up the Leitner valley, by the Katzenstieg (steep high rocky walls to the right of the narrow path, to the left a deep precipice with a foaming glacier stream, quite magnificent!), then, viâ the Kalser Törl to Kals, viâ the Materi Törl (that is to say, the ridge) to Windisch-Matrei, where I arrived in the dark as early as 8 o'clock, while the Englishman with a guide only arrived at 11 o'clock. To-day extremely fatigued; but quite happy in the enjoyment of my magnificent botanical finds, the rarest and strangest little glacier plants, which, as they are all great rarities, collected in the proximity of the eternal

snows on the Tauern, I beg you, dearest mother, to dry very carefully. If possible, let them lie in the same order. Put the smallest, most delicate things into old books; you can dry the mosses in the air as they are. If some of them should have become mouldy, do not throw them away. Do not press them too heavily. As it is raining hard I do not yet know myself where I shall actually go to to-day.

LIENZ, *3. 9. 1855.*

Traveling plans entirely changed; abandoned North Tyrol and Pinzgau; go viâ the Puster valley and the Fassa valley to South Tyrol (Bozen) . . .

Hearty greetings to all of you: specially I wish you, dearest mother, improvement of your health.

Your old ERNST.

66. BOZEN, *Wednesday, 12. 9. '55.*

DEAREST PARENTS,

On Sunday, 9. 9., I arrived happily at Meran, where at last I thought for once I should surely find letters from you, as I had myself asked you in the letter before last to write to me there, and I had also asked at all possible places where there could, perhaps, be letters from you, to have them sent after me to Meran. Nevertheless, I found no trace of a letter from Berlin; therefore, since I left Salzburg I have been without any news from you, and I am in great anxiety, particularly about you, dear little mother. So that now I urgently

beg you, in any case, to send me a letter, even if it is only quite a short one, to Milan. I expect to arrive there within ten days, that is to say, to-morrow I go to Trient, on 14. 9. to Riva, on the 15th to the Garda Lake, on the 16th Venice, three days there, on the 20th Padua, on the 21st Verona, 22d Milan, 23rd to Como, 24th the Lake of Como, thence to the Lake of Lugano and the Lago Maggiore, and through the Engadine, along the whole of the Inn down to Innsbruck, where I shall arrive about the end of September. Then I think of bringing the beautiful journey to an end with a week in Munich . . . I hope that you have duly received the precious Heiligenblut consignment of plants from Lienz. My amiable Englishman took it with him to Innsbruck, at which place he offered to post it. If I am not mistaken, I broke off the account of my journey at Lienz, where we arrived on Monday, 3. 9. In the afternoon I made an excursion to the Dolomitic Rauchkofl. On Tuesday, 4. 9., according to a new plan, I intended to go, viâ Seichen, through the Höllenstein valley to Empezzo, then into the Eassa valley, the most celebrated geological district, and, viâ the Schlern and the Seiser Alp, into the Grödner valley and on the Bozen; but as the rain continued, I had to go by stagecoach to Bruxen. On the following day from there to Sterzing, where I spent the whole day in the most abominable rain, and took refuge in sheer despair with the chemist, who

found great pleasure in showing me the whole installation of his pharmacy, even down to the smallest details, so that here for the first time I was able to get an idea of a pharmacy.

Early on Thursday, 6. 9., as the abominable weather still continued, I abandoned my plans for the rest of the journey and made up my mind to go direct, viâ Innsbruck, to Munich. I was just about to enter the stagecoach when the dear sun came out and lit up the snowy mountains so fascinatingly that I resolved to push on at least as far as Meran (the more so as I felt certain that I would get news from you there), and then make an attempt at the Oetz valley. Therefore, in fairly good weather I still went on the same day over the Jaufen to St. Bernhard, stopped for the night at Hofer's Inn-on-the-Sand, and on Friday, 7. 9., went over the Timbler ridge to Sölden in the Oetz valley, once more in abominable rain and mist, so that the guide lost his way and for three hours led me round into quite another valley. That was a fatiguing march of fourteen hours, always steeply uphill, downhill; and on the following day I did another like it. But I was most brilliantly recompensed for this gigantic exertion. On Saturday, 8. 9., contrary to every expectation, the weather was most marvelously fine. As fast as I could, I labored under my luggage for six hours through the magnificent Oetz valley till I came to Fend, and on the same afternoon I went over the Hoch-

Vernagtferner and Hoch-Jochferner to Kurzras. So far, this tour is the culminating point of the whole journey. All the hardships connected with it, following it, and preceding it, I would willingly have undergone twofold for such indescribable enjoyment. Never had I so closely approached the holy of holies of Nature. For two good hours we marched across the gigantic Hochjoch glacier, completely surrounded by the most magnificent snow-clad mountains and their icy summits, no sign of green anywhere, nothing but the most dazzling white snow, and amongst it the little black spots of rock. Here for the first time I made the acquaintance of the magnificent, interesting, unique world of the glaciers in its actual character. Even a little shock only added to my delight. When, in the middle of a climax of the highest delight, I drew the attention of the guide to the magnificent outlines of the snowy mountains, I suddenly subsided with half my body buried in the snow. Neither of us had observed right in our path a deep snow-covered crevasse, into which I would have fallen (indeed, if I had it would have been no joke!) if, fortunately, I had not still had my invaluable alpenstock on one edge of the crevasse and one of my feet on the other. Thus I escaped with a slight shock and bleeding hands. The descent from the glacier to Kurzras, however, was really dangerous, because the night had overtaken us. But, thank God, we arrived here safely, although

late. On the next day I went, extremely fatigued, to marvelous Meran, where I first saw the southern nature, which also delighted me here exceedingly, particularly in contrast to the polar life of the ice world in the Oetz valley. Still on the same afternoon (Sunday, 9. 9.), I climbed up to the Burg Tyrol, whence I obtained a magnificent view. The next day, quite overjoyed, I spent with a law student, F. Mohr, of Heidelberg (son of the president of the Consistory, M., of Dessau), on the lovely Castle of Lebenberg. This was one of the most magnificent and most pleasant days of my life. Yesterday, Tuesday, 11. 9., I walked with him in the morning to this place, in the afternoon to the Kalvarienberg and into the wonderful Sarn valley. To-day alone to the strange earth pyramids and once again to the Sarn valley. This evening I am very tired, so that you will find very little that is reasonable in this letter. I must only ask you not to be in any more anxiety about me. The excursions that were somewhat dangerous have come to an end. Neither need you be anxious about the cholera. Even in the larger towns of Lombardy there are only occurring at the utmost three cases a day, which, specially for a medical man, is scarcely worth mentioning . . .

For the rest, I wish that you could see me and see how splendidly traveling alone agrees with me, both physically and mentally. Not only are my muscles and sinews in continual development, but

also my character, strength of decision, will, courage, etc. I have become quite another fellow. I am looking forward with great joy to Italy. Here I have already a foretaste of it. What a contrast to the Alpine world!

I hope, dearest mother, that you are much better now. I am thinking so very much about you. How happy would I be if you, dear ones, could enjoy all these glories with me. I am very happy!! But to-night, terribly tired! Good night!

Your Ernst.

67. Milan, *21. 9. 1855.*

Dearest parents,

I thank you, dear father, heartily for the news about my relations and acquaintances. It has interested me very much. In a foreign country like this, where one cannot speak a word with anyone, a letter from home is of twofold value. Here in the South I learn thoroughly to appreciate the high inner value of our North German life. Magnificent and luxurious as this southern nature is, and much as it causes me to feel astonishment and admiration, especially in contrast to the Alpine life which is so very different from it (and which, by the way, I prefer), I regard, on the other hand, the entire life, the people, and their habits as being all the more repulsive and odious. So far I find all my unfavorable prejudices against the Italians confirmed. Hurrah for our Northern Germany!

Hearty greetings to all friends and relations. With all my heart I wish you, dearest mother, very speedy and thorough improvement. Consider yourself heartily embraced and kissed by your faithful old Ernst, who is very merry and in good health.

22. 9. Now something about my journey since I left Bozen, whence I last wrote to you.

On Thursday, 13. 9., I went early from Bozen through the beautiful valley of the Etsch, viâ Kaltern and Tramin, to Neumarkt. From there by stagecoach to Trient. On the 14. 9., the only day in which I did not speak a single German word throughout the day, at first in terrible rain and then in quite fair weather, through the Sarka valley to Riva. On the 15. 9., in the most beautiful weather, by steamer on the Garda Lake—quite glorious! In the afternoon to Verona, which has pleased me to an extraordinary extent. On Sunday, 16. 9., early to Venice, where I have seen as much as possible in three days. Now, instead of all further description, I am only making three large notes of exclamation!!! and telling you that the whole impression of Venice is absolutely "magical." The whole thing appears to me like a dream. . . . The impressions received are unique in their way, so that one has to ponder over them for a long time. The fabulous magnificences still make me feel quite confused in my head. Yesterday I have looked around here in Milan, also a very magnificent town. The cathedral is splendid, the most beautiful thing

of its kind I have ever seen. For a long time here I have reveled in a very beautiful picture gallery. The appearance of the town is more brilliant than that of Venice.

68. MALS, *at the foot of the Finstermitolnz Pass, evening, 27. 9. 1855.*

MY DEAR LITTLE MOTHER,

As I know you will have no rest till you know your old boy once more safe on honest German level ground, and as far away as possible from all glaciers, as well as from cholera, you will already have another sign of life from me, although the letter will not arrive in Berlin much later than the one from Milan. The regret that I felt on the first day of my departure from Venice that I had not in preference traveled direct, viâ Trieste and Vienna, to Berlin and taken you by surprise, was soon forgotten in the enjoyment of the unique characteristics in which Milan is so rich, and it has since then been changed into decided joy that I have strictly carried out my original plan, for the return journey as well. For I have seen glories during this last week that transcend all others, and this has delighted me all the more, because I had not expected much from it. In particular, the tour on the day before yesterday from Bormia over the Stilfser (or Wormser) Joch to Prad has beyond doubt been the most brilliant point of splendor in the entire journey. However, instead of letting

myself go in expressions of delight which, after all, are inadequate to describe to you the high degree of this unique pleasure, I shall tersely indicate to you instead the route from the time I left Milan. I had intended, as you will have seen by my last letter of the 22nd, to leave Milan again on this (the 2nd) day; but the beautiful art treasures in the Brera and, above all, the magnificent, incomparably sublime cathedral, have pleased me so greatly that I decided to devote yet another day to them. Besides that, an opportunity was thereby offered to me of seeing the most brilliant and the largest theatre in Italy, where, on the evening of the 2nd, I heard "La Favorita," by Auber. The music was very good, but, on the whole, the performance, which lasted from 7.30 till 12!! o'clock, did not please me at all—least of all the very celebrated, quite dissolute and immodest ballets, which lasted for an hour-and-a-half, and which were generally contemplated as the chief items in the programme.

On the 23rd, a magnificent Sunday morning, I left Milan and went by rail to Como, thence by steamer over the magnificent Lake of Como, the most beautiful of all I have seen. I would very much have preferred to remain a day at the world-renowned Bellagio, a real paradise, with its Villas Serbelloni and Sommarina. But, as the time was pressing for me, the cholera very bad and malignant, and I had also grown heartily tired of Italy and longed for the dear mountains, I went by post-cart

from Colico to the splendidly situated Chiavenna, and at Castasegna I entered the Swiss canton of Graubünden. I cannot tell you with what joy at every step I greeted the gradual reappearance of the dear Alpine nature, and with what happiness also I heard the first German word, a true Swiss honest "*Grüss di Gott,*" from the mouth of the Swiss frontier officials. I spent the night quite excellently at Vicosoprano, where I ate to repletion again for the first time since I left Bozen. In Italy I have (in the literal sense of the word) starved, and yet expended from four to five times as much as the whole of the rest of the journey had cost!! On the 24. 9., I walked through the beautiful Val Bregalia and over the Maloja pass to S. Mauricio. From here I meant to wander through the whole of the Engadine to Finstermünz, but I made a side detour from the direct road which runs from Cellerina to Pontresina, in order to see the grand Bernina and the Rosegg glaciers, and was happily enough detained by rainy weather. For here I learnt that one can reach Bormio from there in a day, right through the wild mountains. I wanted to take a guide, as it is almost an unknown district (this summer, although there were more visitors in Pontresina than in any former year, only one traveler had made the tour!). But as the fellow demanded 20 francs, I made up my mind to venture the way by myself and to trust to my luck. And, indeed, this did not desert me, for I was fortunate

enough to find the very wild, lonely path that led through nothing but glaciers and icy mountains. It was a good day's march, one of the wildest excursions (viâ Livigno and Trepalle), but very well worth while. During it I still found a number of the rarest Alpine plants in bloom, which, even in the Oetz valley, had already ceased flowering. So you can see how icily cold and wintry it is here! Although I was quite enchanted with this day, it was only a mild prelude to the quite uniquely magnificent happiness which on the following day (26. 9.) really transported me into a heaven of bliss. I am now still too much intoxicated and benumbed with all these grandeurs to be able to write anything, even reasonably, to you about them. For the present only enough to let you know that everything combined to make this day the most glorious and most heavenly one of the whole journey. Throughout the day not the shadow of a cloud in the sky! The air so pure that one could recognize every crevasse in the most distant glaciers and rocks! I had never found before such a wealth of the rarest Alpine plants still in bloom—particularly mosses! The most magnificent glacier fields in the whole of the Alpine chain (Switzerland not excluded!), the most magnificent man-made roads (not inferior to those of the ancient Egyptians)! Everything, everything elevated me into such a magnificent, blessed mood as I have never experienced before, and in the evening, out of sheer

excitement, I still walked in the most beautiful moonlight for two hours longer than I had intended!

INNSBRUCK, *29. 9. 1855.*

I intend to send you the enclosed, which I wrote at Nauders, from there. But as the post had already left I resolved to send it off from here instead, whence, in any case, it will still reach you as quickly as from there. In the meantime I have had two magnificent days of traveling. The day before yesterday I went from Prad (at the foot of the Wörmser Joch) to Mals and on to Nauders, during which time I always had the most magnificent backward view of the ice-world of the Ortler. In Mals I met a medical student, Horn, of Bremen (nephew of the administrator of the Charité), who is studying at Munich, a very nice lively fellow, with whom I shall now complete the rest of the journey and afterwards run freely about in Munich, which pleases me very much. Yesterday I walked with him from Nauders through the Finstermünz Pass and the lower Inn valley to Landeck, a very nice mountain excursion (viâ Obladis), and to-day we drove together in a stagecoach from Landeck to this place, still a very nice concluding tour, always in the same beautiful weather that glorified the way over the Stilfser Joch. Altogether, it seems to me that the entire remainder of the journey will shape itself just as splendidly as the whole of the first part. It happens by chance that to-morrow a

brother of the Emperor will be installed here as Governor of the Tyrol, and that for the celebration of this festivity a very magnificent shooting match will take place, for which occasion festively decorated competitors from all the Tyrolean districts have appeared in great numbers. There are swarms in the most multicolored and most picturesque dresses. To-morrow a highly magnificent procession of several thousands of festively decorated visiting marksmen will be arranged. On the day after to-morrow we go from here, viâ the Achensee and the Tegernsee, to Munich, where from the 4th to the 7th (Thursday to Sunday) the great musical festival will be held. This will be immediately followed by the celebrated Munich October festival, during which one has the opportunity of becoming acquainted with the South German, Bavarian national life in its complete character. Everything, therefore, is working together splendidly, so that at the end of my magnificent journey I shall be afforded the chance of seeing on my way a very great abundance of the most varied pictures of life. It has really been a most magnificent journey, and I cannot thank you, dearest parents, enough for it and for having granted me this incomparable pleasure, which is connected with so much profit to my physical and mental training. A thousand, thousand most cordial thanks for it. I cannot tell you what an extraordinary wealth of the strangest and most varied conceptions I have acquired

through it. When during the beautiful drive to-day I recalled the individual days of the journey to my memory, such a richness of the most magnificent, most multicolored pictures, one after the other, rushed through my mind, that I believe they will satisfy me for the rest of my life. In addition to that, I am physically as extremely well and cheerful as I have ever been before. But now enough for to-day. I am very tired and am heartily longing for rest. Greet all friends very cordially, and for yourselves a very fervent greeting and a kiss

from your old ERNST.

69. MUNICH, *10. 10. 1855.*

DEAREST PARENTS,

On Monday, the 1st October, early in the morning we climbed up to the castle of Ambras and the Lanser Köpfl, two hills south of Innsbruck, whence one enjoys quite a magnificent view over the very wonderful valley in which the town is so prettily situated. On Wednesday we visited the interesting Tyrolean Landesmuseum at Innsbruck (quite analogous to the Linz museum for Austria) and then we went by stagecoach to Schwartz. From there on the next day, 2. 10., we went on, viâ Jenbach, the magnificent Achensee and Bad Kreuth, to Tegernsee, a very nice tour of fifteen hours. Unfortunately at the beginning there was just as exquisite a rainfall for taking leave of the high Alps as there was on my entrance to the Alps at Ischl. Later on,

however, it cleared up fairly well. Tegernsee is also very prettily situated. Thence (on Wednesday, 3. 10.) we went by stagecoach to Munich, quite a miserably flat journey of eight hours, which, however, we only covered in ten hours, because there were only beer-drinking Bavarians as passengers and these had to swill at every inn which the dear God had planted by the roadside. Although the way was terribly monotonous, I was in such a blissfully happy and thankful mood, in such a state of fervent and peaceful elation at all the marvelous beauties which I had been enjoying during these eight weeks, that I did not observe anything of the tedium which seemed to overwhelm my traveling companions. It is probable that I have rarely been for so long a time in such a blissful mood, in which I could calmly rejoice in God, as during those first days after the journey. It was only in the sorrowful idea of taking leave of the marvelously sublime and magnificent Alpine world which I had learned to love so infinitely, in which I had become so profoundly confident, that the silent feeling of happiness was somewhat disturbed. In what a different mood had I set forth! I had set out with a thousand trembling fears and anxieties, uncertain and undecided, I believed that neither physically nor mentally I possessed the strength to carry out such a journey: in particular I had feared that already within the first week my knee would have succumbed to such fatigues. And

how very differently and magnificently has everything turned out! I have seen a thousand times more, and more beautiful, things than I had hoped to do, have undergone far greater exertions than I had expected, and all these with the greatest advantage to my body no less than to my mind. You ought to see me and speak to me now, in order to appreciate how I have become quite another man through this single journey. While formerly in a fit of hypochondrium I imagined myself to be banished in a miserable weak body, I now realize from experience that I can stand fatigues and marches, that I can undertake walks in the mountains as few other Alpine travelers can do. At least, among the (approximately) 60 travelers with whom I walked for long distances I found only one who could beat me (strangely enough, a Catholic theological student, a hardy fellow who, I must point out, had not to drag about 30 lbs. of luggage, as I generally had to do). In short, I now feel the fresh, new fire of youth coursing through my veins as never before. Surely my mind has not become less strengthened thereby! I made a point of putting aside a great part of the childish unsociability and the timid anxiety which hitherto have so much spoilt my pleasure in my intercourse with strangers. But putting altogether aside all the benefits which the magnificent Alpine journey has exercised upon my character, it has also infinitely enriched and augumented my knowledge and con-

ceptions. Naturally, quite in particular those appertaining to natural science, and *in specie* to botany. How very differently shall I be able now to study geology and physical geography! The richness of my new conceptions is really so fabulously grand that for a long time I shall still have to work so that I may bring these marvelous impressions into something like order. But what altogether different views have I also formed of men and of social life, and how much have I gained in independence through intercourse with friends! In short, dearest parents, the real true profit which I have derived from this journey, setting completely aside the purest and most noble enjoyment of nature itself which I have experienced in such a rich and high measure, merely for the training of my character is so infinitely great that I cannot thank you enough for having afforded me the means of making this journey. But how thankful must I also be to God that he has ordered everything and guided me so graciously and mercifully. Although, on the whole, I was really seldom in serious danger, the Oetz valley excursion, for instance, could have had rather a bad ending. What still makes me most particularly happy is that, generally speaking, I have so strictly carried out my original traveling plan (which in the first place I owe to my dear Richthofen), with the exception of the northeast Tyrolean portion (Kriml, Zillertal, Tuxertal), which was made impossible on account of the rain. When

I compare the Alpine part of my journey with that occupied by my stay in towns, particularly the week in Italy, I decidedly give the preference, in contradiction to most of the other travelers, to the former. In reality, it might be that the special natural scientific interest afforded by the Alpine nature by far surpasses in me the latter, the more ethnographico-historical art interest, but as a matter of fact the manifold difficulties and exertions connected with the Alpine journey lend a value all the higher to their enjoyment.

Till now the least interesting thing to me was the celebrated musical festivity, about which so much exaggerated noise is made. I have once again come to the conclusion that my musical sense is in reality equal to zero. The only music in which I take any interest is the popular song. The day before yesterday a gigantic military concert took place in the glass palace here (there were 225 musicians, all bandsmen of the Munich garrison), which interested me far more than the much more celebrated great musical festivity with its 900 vocalists and 200 instrumentalists. The description of the latter (on the 4th and 5th) you will probably have read in the papers. I have not been very much charmed with it. On the other hand, the very marvelous, beautiful and rich treasures of plastic art, which confront one wherever one goes, have made an all the more important impression upon me. Chiefly the new Pinakothek,

and, again, the Glyptothek, and the marvelous frescoes of the Odyssey and the Nibelungen in the Residency, in my opinion surpass everything else that I have seen hitherto . . .

Good-by! The next letter once more from Würzburg.

Your old ERNST.

I wish you could have seen me in my traveling costume as I entered Munich. It was very fortunate that Hein had sent me a complete suit here *poste restante*. My grey traveling coat had literally fallen from my body in rags. Of the three shirts I had taken with me, there are only some of the upper portions still existing.

70. WÜRZBURG, *18. 10. morning.*

DEAR PARENTS,

So it is from Würzburg that I greet you once again! As you can see by the enclosed letter to Aunt Berta, which you might give her on her birthday, I cannot yet get accustomed to my life here. The roving spirit and the traveling unrest are still in all my limbs, and hinder me from quiet continuous work which is so very necessary. The contrast between the Philistine daily life here, into which I must plunge again, and the marvelous Alpine world, which a short time ago I enjoyed in such a wonderful manner, is indeed far too great. How terribly pedantic, dusty, and grubby everything here appears to me to be. How different, on

the other hand, to be on the sublime mountains, with their grandeur, I might even say their super-terrestrial nature, where man is so perfectly free, where he so completely forgets himself and his petty daily life. Surely in this unrestricted freedom, in this divine self-oblivion, there lies no little part of that unspeakable glow of joy which in the loneliest, the grandest parts of the mountain world irresistibly draws the soul upward to heaven, so that one really feels nearer than ever to the super-terrestrial, to the divine. The more I strive now to force myself again into the old Philistine life, the more I see from day to day how immensely far I have been snatched out of it through the journey, and how I have come into quite other and higher spheres of thought and of life. On the other hand, I must admit that the long interruption of my medical studies has thrown me back very much, and I observe every hour with new terror how much I have forgotten and how much has evaporated in the interval. Yesterday, when I held in my hand for a few hours the fat-bellied textbook of *materia medica*, the most terrible instrument of torture that ever the senseless quackery of practicing medical men has fabricated for the torment of free intellectuality, and when I tried in vain to recall from it the old reminiscences, I almost completely despaired, and it would have taken very little to induce me suddenly to pack up my bundle and rush to you in Berlin for a few days, which I have

felt myself tempted to do almost every hour since my return, and more than once I was actually on the point of putting the wild thought into execution. I would so much like to pour out my overflowing heart to you, but yet it cannot be, and I must wait till Easter. The vacuum in my medical studies is now so gigantic that, as a matter of fact, every second ought to be valuable to me in order to fill it. And yet since the journey I cannot, with all my efforts, collect my thoughts and force them under the old yoke. I hope that with the beginning of the lectures and of the clinical course it will become better! My only comfort now is Tschudi's magnificent book on the Alpine world (with which Karl has presented me). Yesterday the following sentence which was as though spoken out of my own soul, attracted my attention: "As the mountains rise aloft and solitary out of the level land, so the thoughts of God which repose in them rise above everyday life and sentiment, and probably we would breathe more freely and break through the veils that dim our conceptions of the world, which are so often based on petty misguided education, if we would more frequently brighten up and extend our range of ideas and our inner life in the presence of those eternally beautiful originals, of those crystallized thoughts of creation of the All-Pervading Spirit of the Universe!"—!! . . .

A thousand hearty greetings from your old

ERNST H.

71. WÜRZBURG, *23. 10. 1855.*

DEAR PARENTS,

. . . On Sunday at last I took a bold step and with one jump plunged desperately into the noble *ars medica.* That is to say, since the "ever memorable" 21st October, 1855, A.D., I have become a real clinical hospital practitioner! Hear, hear!! And now spend two hours every morning with my patients!!! Would you not like to be in the place of these poor little creatures?? It really sounds ridiculous, but nevertheless it is true! I only wish that you could see with what highly imposing gravity, his grey clinical hospital hat on his head, stethoscope and percussion hammer in his pocket, the important Herr Dr. is strutting about on his round of visits! My first patient was a man of 45 years of age, a stoker, who four days ago had been suddenly seized by a very violent attack of *cholera sporadica.* It was lucky for him that it only came into his mind to send for the doctor on the fourth day, after the illness itself had in reality passed over. So now I had only to attend to after treatment, and then, after all, after I had examined into the details of all the corners and ends of his body for a few hours, I was fortunate enough to discover (through physical exploration) on the lower part of the left lung traces of *Emphysema pulmonum,* from which the man has probably been suffering for years without complaint, but which, now that he is undergoing treatment, must be

treated without mercy and for which then and there I solemnly launched my first prescription . . .

You want to know further details about my glacier adventure. This, as a matter of fact, is very simple, but is much easier to be demonstrated *in corpore* than by portraying it or trying to describe it. I had the inestimable alpenstock eight feet in length, to which alone I owe my salvation, firmly grasped in my right hand. When I fell down and when I subsided with half of my body in the snow, it remained right across the crevasse, so that I was able to hang on to it quite safely, and could work myself out on it with my disengaged hand, while the guide kept hold of me. More complete details have not become clear even to myself, particularly as at that moment I did not feel inclined to make accurate observations concerning the physical direction of the line of descent, or the "how" of the extrication, but thanked my God that I was out of the fix, for which, indeed, I had every reason . . .

Be heartily greeted by your old

ERNST HAECKEL.

72. WÜRZBURG, *2. 11. 1855.*

DEAR PARENTS,

. . . That, in addition to my practical efforts on the other hand, I try to become more human you can see from the fact that I am now going to take dancing lessons (!) (hear, hear!), which will begin this week. I am also taking lessons again in the

English language, as a very favorable opportunity for this has been offered to me by a born Englishman, who, in order to distract his thoughts, gives lessons, and who, therefore, does it very cheaply. If only I had more time I would take more of them. But when the courses begin again I already feel that I shall not know how to find it. The worst of all now is that I have suffered a very sad relapse of *phytomania* or hay-collecting fever, so that now on several afternoons I could not resist the temptation of carefully examining my treasures of Alpine flowers, of putting them in order and completely classifiying them with the help of the university herbarium, which Professor Schenk placed at my disposal. I must still add that Dr. C. Gegenbaur, the privat docent who has now come to Jena as professor of comparative anatomy in place of Oskar Schmidt, has presented me, in addition to four very rare and beautiful foreign (tropical) birds, with all the duplicates of his herbarium to the number of twenty large portfolios, in which I have reveled for several days quite after my old manner and my old delight in plants which were so long forgotten and dormant. Naturally in this process very much old rubbish was thrown away, but also very many new beautiful and rare things were acquired, so that my herbarium now obtains the very gratifying increase of ten strong volumes. The rest of my spare time, which the clinical hospital practice and my occupation with the dear little plants has left

me, I have spent chiefly in the anatomical and zoötomical museum, of which Kölliker was kind enough to hand me the key . . .

I hope that you will like the flavor of the Würzburg grapes, and when you eat them think at the same time of your faithful old

ERNST H.

73. WÜRZBURG, *19. 11. 1855.*

MY DEAR FATHER,

. . . It becomes more and more clear to me at the present time from my entire life and its individual phases that in every direction, scientific as well as human, I have now made important progress in comparison with last year, when, I must admit, I remained in many respects more backward than I ought to have done. It is probable that I owe the chief thanks for this to my magnificent Alpine journey, which in so many ways has made me acquainted with other people, views, and inclinations, which has extricated me from the narrow, restricted limits of my old philosophical caprices and narrow-minded perceptions, and has introduced me to the wide many-sidedness of the variegated life of the world. Next to it, for my versatile training and the enlargement of my views of life, I owe a great deal of thanks to medicine, especially to the practical side of it, which has likewise afforded me a real view of life as it is and how we should accommodate ourselves to it. I must admit that this

violent extraction from an imaginative world of visionary ideals and my sudden transference into stern reality, the acquaintance of which in its entire character I am only now making, is by no means agreeable; but I am all the happier now that this cruel leap, which *nolens volens* had sooner or later to be taken, is over, and that I can now contemplate the real world with just as real eyes as it deserves. In this regard, practical medicine, and particularly the clinical hospital where one becomes thoroughly acquainted with the miserable imperfection and the wretched defectiveness of our physical and intellectual life, is quite an excellent, although at the same time bitter and hard, school. At first this sudden annihilation of all the beautiful mental pictures by means of which I have created for myself in my secluded mind an ideal conception of the world, independent and bare of all reality, naturally appeared to me hard and unbearable enough. But now I gradually accustom my whole way of thinking and conception more and more to this real contemplation of human affairs, and now, when I enter further into the rough stormy life, I shall be all the less surprised at its illusions. If, for the rest, I have reconciled myself for the present to practical medicine, at least in as far as I am convinced with ever-increasing self-conquest (which I chiefly owe to the clinical hospital school) I can some day really practice it in case of need, I do not mean in any way to say that my unbounded pre-

dilection for the theoretical natural sciences (specially scientific zoölogy and botany and microscopy in general) have in any degree diminished. On the contrary, through my beautiful Alpine journey, which brought before my eyes so many fields of the most interesting natural science, the latter has been considerably increased and has received a powerful stimulus, so that I am now a more passionate "naturalist" than ever before. But from this you can already see how much I have gained in self-conquest, and that, notwithstanding this, for the immediate future and *in specie* for this winter I have completely given up my purely theoretical natural scientific studies, and that at last I have firmly resolved to carry medicine to a perfect conclusion, so that I can pass our State examination . . .

From 7 till 9 o'clock in the evening is the time now for the celebrated dancing lesson, which fortunately I take with several acquaintances, especially with my more intimate friend Dreier, of Bremen, and his acquaintance Knauf, so that we can make the extremely tedious affair rather merry and pleasant by mutually finding amusement in it. Our dancing master, Herr Quäsar, a lump of meat nearly as broad and deep as it is long, as well as his scarcely less corpulent madame, the ballet-mistress, furnish us, through the scantiness of their brain which seems to have become atrophied in proportion to the hypertrophy of their adipose tissue, with enough material for merriment and

mockery. He occupied the first lessons with simply instructing us how to pay compliments, but in particular how to behave ourselves in the presence of the king and the queen. At the present time we are diligently studying "Française" (with six ladies), in which I, with my long legs, often make magnificent leaps half across the dancing room. Naturally, my awkwardness is perfectly admirable. After the dancing, or, on the days when it does not take place, after the English lesson, which I enjoy with my very strange Englishman, Mr. Watson Sratshard [?], I generally go for a little while with Beckmann and Strube to have a drink. Then from 12 to 1 o'clock we continue regularly to work at home. During these hours I specially want to go on now with the description of my journey, the composition of which gives me an infinitely great pleasure, because in doing so I experience over again in spirit all the magnificent enjoyments of that unforgettable wandering. It is only a pity that, with so little practice in writing, which is unfortunately too much neglected in our university studies, so that we soon lose the slight proficiency in style acquired at school, I am so little capable of faithfully reproducing the various lively feelings, views and enjoyments, which still actively excite all my senses at the recollection of the splendid incidents . . .

I have still added to the Bocksbeutels, which I hope, dear old people, you will heartily enjoy on

papa's birthday, a few specimens of the magnificent Tyrolean Alpine plants of which I have brought a large bundle with me; also, so that you can more easily follow me on my way, I have traced a graphical representation of the route of my journey exactly according to the excellent map of the Tyrol by Mayr, which was of the greatest service to me everywhere, and which I have traveled through in its fullest extent, from the west (Milan, Lake of Como) to the east (Hallstatt, Traunsee), and from the north (Augsburg) to Upper Italy in the south. Finally, I enclose a little sketch-book of my journey, which, in reality, is only of some value to the draughtsman himself, for whom in every stroke of the pencil a crowd of recollections of the sweetest kind is attached, while other people will scarcely be able to make anything out of the contortions and scrawls in the sketches, naturally thrown off in the greatest haste. Most of the sketches only represent the outlines of the mountain chains, which in many ways were interesting to me. I thought, however, that some, for instance specially the later Tyrolean views, the Ortler peak, etc., might not be quite without interest to you, dear papa. Later I intend to execute still larger landscapes from these sketches. Now I am often sorry that I have not made more sketches. As a matter of fact, they are such a precious remembrance, and in every little picture, imperfect as it might be, the whole of the interesting situation in which the

outline was dashed off comes back to my mind. Whenever I contemplate such an outline I fall into a whole series of recollections of my travels. It is one of the great advantages of traveling alone that, in case time and conditions allow, one can sit down and draw when and where the inclination arises. The solo traveling has altogether pleased me so exceedingly well that in future I shall always keep to myself on the route, unless I discover as a companion a very intimate friend who shares all my inclinations and desires. In this way one becomes much more independent, is more compelled to come into communication with other people, and has to come out of oneself much more. It is also very pleasant to be one's own master, to walk and to rest how, when, and where one likes, and to stop at any particular spot as long as one chooses . . .

The only movement I have now is the clinical hospital town trot to my patients in the different districts, whereby at the same time I thoroughly make the acquaintance of the old intricate town. On the whole, this sort of practice pleases me fairly well, as medicine proper is still most of all to my taste. On the other hand, I cannot yet find any liking at all for surgery and obstetrics. Now I am also practicing the latter and have thereby the really not very enjoyable pleasure of being called to the births in the lying-in hospital, which usually happen just during the night when other honest people are enjoying their best sleep. Thus, for

instance, yesterday I had been working till 1 o'clock, had gone exceedingly tired to bed, and had scarcely slept an hour when I was called up again; through this I was occupied for over two hours and could only go to bed again after 4 o'clock, so that *summa summarum* I have not slept for quite four hours. And so one gradually makes the acquaintance of the delights of practical medical life. But, after all, I will bear these things with pleasure so long as I shall not have to devote myself to them for the whole of my life . . .

74. WÜRZBURG, *3. 12. 1855.*

DEAR PARENTS,

. . . What you, dear father, observe with regard to the heavy style of the description of my traveling is unhappily too true, and in making this attempt I have altogether come to the conclusion once more how greatly the mistake in our school work consists in our being solely dependent upon a purely receptive study, and also in our not being more frequently obliged to exercise ourselves in original independent execution. The limited skillfulness in style which one has hitherto acquired at the classical secondary school by doing free compositions in German is soon quite lost through this total neglect of writing, and if later on one is obliged to describe something, it takes a long time before one can get even into partial trim again, and in the end, in spite of all endeavor, the whole story becomes heavy and

unpalatable, although it has occupied much time. This, however, will not deter me from making the attempt to go on with it. During the last weeks I was absolutely unable to find the time to do so, as my small work on typhoid and tuberculosis, which I have undertaken with Virchow, completely absorbed every spare moment. Unfortunately, this accursed want of time has also hindered me from accepting another very friendly offer made to me by Virchow, who invited me to make a delicate microscopic anatomical examination of the "formation of cysts in the *plexus chorioidei* of the brain" in his room and under his guidance. For a long time I had wished to try for once what I could do in such special work, and just this opportunity of making such a trial myself with Virchow, to whom with regard to the finest microscopic work, which is also my chief aim, I must adjudge the first prize, is only what has been intensely desired by me. But to my greatest regret I was obliged to refuse this favorable offer, as it is simply impossible for me with my present medical practice, which claims the whole of my day, in any way to find the necessary time and leisure for it . . .

In old faithful love your ERNST.

75. WÜRZBURG, *Saturday morning, 8. 12. 1855.*

MY DEAR, GOOD LITTLE MOTHER,

. . . You can well imagine how terribly Richthofen's magnificent prospects of traveling have

excited me. Every item of such news now sets in motion a whole army of rebellious traveling thoughts in my restless mind. I must really take care not to read descriptions of travel, etc. For, as soon as I hear of new discoveries in far-off tropical countries, my thoughts are immediately occupied in depicting for themselves in detail the entire fauna and flora of that country. Thus, for instance, the reading of "Petermann's News from J. Perthes' Geographical Institute," which papa also knows well and which also hangs up here at the Harmony, has a decidedly pernicious influence upon me. The other day when I read in it the account of Vogel's travels in Africa, but specially of the glacier excursions of the brothers Schlagintweit in the Himalayas, my rebellious mind dreamed of nothing else but traveling, and ever again of traveling for days afterward! . . .

76. WÜRZBURG, *20. 12. 1855.*

DEAR PARENTS,

. . . Have you also such bitter cold in Berlin? It is a more severe winter here than anybody can remember since 1829. The subtropical Würzburg climate, celebrated for its mildness, has suddenly been converted into arctic cold. Although, as a rule, I am a great lover of cold and inurement, this is awkward for me in the icy condition of my airy room, and in the evening when I sit at my table I am nearly frozen, so that when I get up to go to

bed at 12 or 1 o'clock I am quite stiff and rigid, and it takes me a long time to get only fairly warm in my bed. When, after all, I have at last succeeded, and I feel once more quite warm and comfortable in my nest, then, usually at about 2 or 3 o'clock, there tinkles the pernicious bell of fate calling me to a confinement. During the week before last, in particular, the births came in shoals (the consequence of the carnival week at the beginning of Lent!), and I was awakened on three consecutive nights, so that I cursed mother Nature who does not permit the human race to propagate by means of eggs like the greatest number of the animals, or, better still, by the formation of shoots and buds like the polyps. But what is the use of that! This winter must be put up with! . . .

77. WÜRZBURG, *Wednesday, 26. 12. 1855.*

DEAREST PARENTS,

Just now, on the evening of Boxing Day, I received the loving Christmas box, which I had longingly awaited and which I had nearly given up this afternoon. But now the joy it afforded me was all the greater! A thousand, thousand thanks for all your kindness and your love. Once again you have so richly cared for me that I cannot thank you enough for it. The picture of grandpapa, which is really a very good copy, has given me very particular pleasure, The expression of the mouth seems to me even more kind than in the original; only

the eyes do not please me quite as well. It will be a real ornament in my nice study in Berlin. There the picture shall hang just above my writing table and shall constantly remind me of my magnificent grandfather, to emulate the noble mind and spotless character of whom shall ever be my endeavor. You have also given me a very great joy with Van der Hoeven's *Zoölogy*, which for a long time I had wished to possess. I received the beautiful book already four days ago. To you, dear mother of my heart, I still express my special gratitude for the tender care with which you have thought of my larder. With the Spartan food which I generally eat here one can really make very good use sometimes of such little dainties . . .

Notwithstanding the distance from you dear ones, and in spite of my loneliness here, which made a real comfortable, homely and merry festivity impossible, this time I have enjoyed Christmas more deeply and fervently than, perhaps, I have done before. I must admit that on Christmas Eve there was very little of it to be observed. Rather glum and dull, I spent it with Strube and Beckmann in a wine bar. Thoughts of home might also have been very much in the minds of my two friends, for they were in anything but a merry mood. Even Peter, who is generally so merry and witty, was to-day quite silent and could not rouse himself to a pitch of merriment. Each one thought only of the dear ones far away, and thus we sat quietly and silently

facing our famous Steinwein, which as a rule so easily loosens both heart and tongue, but which this time was not capable of dispelling the settled gloom and the shadow of homesickness. Constantly I saw before my eyes the fir tree, decorated with large sparkling lights, around which you dear ones would at that moment have all been assembled, and under which my dear little nephew, or rather my little godson, would be filled with his pure childish joy. Then I thought again with longing of the earlier years of my own childhood, when I had also given myself over quite innocently and free from sorrow to the beautiful and sweet joy of Christmas. The more sadly and more gloomily Christmas Eve passed for me, the more joyful and happy Christmas Day appeared to be. I must admit that even then I had no friendly soul to whom I could have revealed and communicated my whole innermost, and the exalted satisfaction of being able to express my thoughts and feelings to a corresponding mind and to find in it harmonious accord, which alone affords true inner joy and stability, was again missing to me to-day as it was yesterday. But all the more fervently and deeply I felt how much my most ardent convictions and most strenuous endeavors find the full and deep acknowledgment that they deserve in your faithful hearts, dear parents; and this comfort, the firm unalterable conviction of our spiritual communion, transported me, in spite of the great distance,

exactly into your midst so vividly that I felt nothing else but that at that very moment I had the happiness of being also with you in the flesh and of being able to pour out to you, face to face, the whole of my full heart, with all its hopes and doubts, joys and sufferings. The happy mood in which I spent Christmas Day was, to a great extent, due to an excellent sermon which I heard preached here on the 25. 12., by an old church dignitary, and which so well corresponded to my own thoughts and hopes at this great feast that it seemed to emanate from my own soul. Thereby I was once more led to meditate more deeply about my relation to life and about my task in it. Then, finally, I arrived at the satisfactory conclusion that, in any case during the last year, I had approached the task of my life by an important step nearer; altogether I enter the new year 1856 with quite different hopes and resolutions to those on the preceding ones. Whereas during the last three years of my studies New Year's Day had always been one of the bitterest pain to me, a day on which I did not think I could ever do anything better than to plunge myself into a deep moral state of depression over the wasted old year and the bad use I had made of it, and to regret, instead of doing good, the many errors I had committed during it, this time it is altogether different. However, I am now, perhaps still more than formerly, conscious of the great imperfection and defectiveness from which, in spite of the best

intentions, all my actions suffer. But now, instead of vainly grieving over what has occurred, I rather direct my view full of confidence toward the future, simply with the best will to do better henceforth. If at that time I had only looked with childish timidity into the black new year, from which I believed that I could expect just as little as from the one just completed, now, on the other hand, I have taken joyful and happy courage, and hope, with the help of God, to do something decent. Although the riddle of my future is hovering in indistinct outlines before my eyes, perhaps still more now than before, I no longer indulge now as at that time in such subtle enquiries, so full of anxiety, but in full confidence yield up the whole of my care for it to my God, who will surely not forsake me. Yes, at last I might, without boasting, hope to become an able, fine fellow, and I pretend to possess the same firm unalterable will to do it. I believe with joy that I may consider this essential change in my character to be the result of the past year. At last, at last, strength, courage and hope have entered into my dismayed, weak and desponding heart. At all events it is about time that at least I abandon that childish weakness, that exaggerated self-mistrust, which stunted all my energy and stifled all my courage in life. Although later on it will be my constant care with strict love of truth to become fully conscious of all the defective weaknesses of my will and action, I will not, how-

ever, as hitherto, be disheartened and without courage concerning this, but by powerful and perfect deportment will endeavor all the more ardently to approach my ideal. I cannot possibly describe to you here how radically and thoroughly I now feel changed, as I hope very much for the better, in my character. Only verbally can I pour out my whole heart about it, and I think that you will notice it in my entire mode of action . . .

Now to what circumstances do I owe this thorough change in my entire will, thought and action, about which presumably you will not be less glad than I am? I attribute it, before all else, to two causes: first, to the magnificent Alpine journey, and second, to the serious school of life through which I have passed here during the last year—particularly during the last months of it. Regarding the former, every day I become more conscious of the inestimable advantages which it has had for the training of my mind and character, not to speak of the inexpressible enjoyments and conceptions of nature which will ever remain unforgettable to me, and which will make that time appear to be the most beautiful of my life. How prejudiced does a man remain who always vegetates only in the narrowest circle of his immediate environment, and who in the dark recesses of his study imagines for himself the magnificent God's world beyond it! It is with one's own eyes that one must see life, it is with one's own senses that

one must become acquainted with the infinitely manifold modifications with which it is accepted by the varying brains of different individuals as well as in the national life of entire peoples, and make oneself a true conception of the endless many-sidedness of it, and, in conformity with it, also train one's own acts and thoughts in a distinct direction which one pursues with persevering persistence.

It is probably this circumstance, namely the entering into, and the acquaintance with real life, the abandonment of theoretically formed nebulous shapes of ideals, which, although in quite another direction, has been the really creating and developing element in my life here during the last months: and there again, before all, it is the practical study of medicine to which I must offer this recognition. How much do I now thank you, dear parents, that you have so mercilessly forced me, however despicable and contrary to my whole aspiration it might have been from the very beginning, to carry through this study consistently. Not counting the invaluable advantages with regard to my future subsistence, and specially for the purpose of the realization of my favorite (traveling) plans, which I shall derive from my practice as a doctor, I have obtained thereby a much more correct, and therefore better, conception of life as it is than I have theorized it out in my head. As surely as I believe it to be necessary that every man who is striving with true seriousness after the most possibly com-

plete accomplishment of his life task forms a certain ideal which floats in front of him in all his actions as the aim to which he has to approach as close as possible, and as surely as I hope to have created for myself such an honest ideal, so just as certainly do I now believe that I have become convinced that in too prejudiced a pursuit of it, with complete neglect of and estrangement from outward real life, one recedes from the task which one tried to reach through the latter by means of the former. Therefore it is my serious aspiration, which will also soon be crowned with success, to make myself conversant with this real world, without in this endeavor becoming unfaithful to the precious ideals toward which my young mind is still bent; and this intention I have now to a great extent reached through my present life here . . .

In old true love your

ERNST H.

78. WÜRZBURG, *13. 1. 1856.*

DEAR PARENTS,

The new year has begun with me as the old one has closed, *i.e.*, I am now looking with joyful courage and confidence, full of hope, into my future life, although just now I see before me less than ever a definite plan for it. I believe that the dear God will keep a subaltern position open for me somewhere in the vast realm of natural science. "We cannot all be alike!" One of the chief advan-

tages I have gained during this winter in this regard is the fact that I have learned to perceive that medicine is not quite as bad as I had imagined, although as a science it is miserable enough. But I have at least advanced to this recognition that if need be, if the worst comes to the worst, I could assume the airs of a practicing doctor. In any case, the main thing about it is self-confidence, as Mephistopheles very rightly observed: "For only if you feel confidence in yourself will other souls feel confident in you!" . . .

With an assistant in the infirmary (Dr. Koch), I have been following a private course which has given me a very deep inlook into the blackest of the black seamy side of medical practice, and have had to get accustomed to the most abominable things which only half a year ago I could not have believed myself possibly capable even of looking upon. At first it was very difficult; now I occupy myself with these subjects with the same quiet cold-bloodedness as with all the others. The purely scientific conception of them makes these evil things immensely easier to deal with and the greatest difficulties easier to be overcome. Only for surgery I have a hellish respect, but probably this will also partly diminish when I have advanced more in it. Up till now I have not practiced it at all, and have reserved it, as the only thing left, for Berlin, where I hope to get somewhat accustomed to it through Langenbeck's brilliant skill in operations. The

advantage which arises from such a systematic habituation to disgusting and abhorrent things and scenes, from which the non-medical heart recoils, is that it assists in the strengthening of character and will, and therefore cannot be too highly estimated, and I remember that I have read in *Truth and Fiction* that Goethe also visited hospitals in Strassburg with the sole object of accustoming himself to the depressing effect of such revolting scenes and thus hardening his supersensitive mind, in which he succeeded admirably. And with me it is exactly the same thing. But, in addition, I owe the truly scientific conception of things which alone raises me over these difficulties to the, in this respect, incalculable beneficial influence of Virchow himself.

I spent a very merry evening a week ago to-day (Sunday) with Beckmann and Strube, when for once, in spite of all divergencies of views, we spoke out our minds very thoroughly and in a friendly spirit to one another. Finally, the conversation naturally turned upon our several futures, which we depicted to one another in all the various colors of youthful imagination, and this brought us into so merry a mood that Herr Bundschuh's excellent Leistenwein seduced us into making the following comical wager pact: "On New Year's Eve of the year 1866, that is to say, in exactly ten years from now, we three would meet again and each leaf of the trefoil who in the meantime should have

brought home a wife should pay to each remaining bachelor ten bottles of the best Würzburg Bocksbeutel!" But the best of it was that each one admitted afterward that, as a matter of fact, he was half convinced that as far as he himself was concerned it seemed to be rather a doubtful bet, and that he could not confidently guarantee that meanwhile his proud youthful neck would not have bent under the matrimonial yoke. I, for my part, believed myself the most sure of the three, because I hoped that that very day ten years hence, or still earlier, I would be promenading in the shadows of the palms on the shores of a South Sea island, or in the forest primeval of Madagascar, rather than in the streets of an honest German university town . . .

On the 2nd January, the anniversary celebration of the foundation of the university took place, during which the new rector, Hofrat Scanzoni, made his inaugural speech, which by reason of its outspoken candor produced extraordinary surprise and applause. He took as his subject "The free right of nomination by the universities." In a historical introduction he pointed out first of all that, from the beginning, the universities had been nothing but independently united colleges, neither founded and ordered, nor under the tutelage of or even ruled by the state. Then he further developed the fact that one of their first and most precious rights is to nominate their own teachers according to their own free opinion, and that without this

right the universities would soon become slavish institutions of education and punishment, as many governments took more care to stupefy the people and to keep them on as low a plane of education as possible than to advance them through the out-spread of science. Then followed a tirade, as powerful as it was energetic, against the Bavarian Ministry, which is just now making strenuous attempts to annihilate this right of free nomination of the professors . . .

I am very sorry that poor Adolf Schubert is again worse. I had intended at Christmas to send him a little book, which I believe will be most successful in the invigoration and strengthening of his whole hypochondriacal mental disposition. At least I myself owe a great part of my vital energy and will power, which I am acquiring more and more now, to this little book. It is *The Dietetics of the Soul*, written by Dr. Ernst von Feuchtersleben. You would do me a great kindness if you would buy this quite excellent little book, which appears to me to be created for the healing of Adolf's condition, and if you would give it to him from me, with the urgent request that he will read it repeatedly and thoroughly . . .

In old faithful love your ERNST.

79. WÜRZBURG, *1. 2. 1856.*

MY DEAR AUNT BERTA,

Although I have not written to you for such a long, long time, you will surely be convinced that

I have been all the more in spirit with you, and that I have thought of you in all the joys and sufferings that I have experienced during the past year in which we have been separated from one another. During the delightful pleasure which the magnificent Alpine journey has afforded me and which has made me so strong and healthy in body and mind, I have very frequently thought of you and wished that I could communicate to you all these most noble of all enjoyments; but all the same you were not standing less in spirit before me; you strengthened me and comforted me with your customary faithful and friendly encouragement when I had to accommodate myself here in Würzburg gradually more and more to the conditions of my study and of the profession which at first I disliked so strongly, and to grow accustomed to the practice of which has cost me so much and such difficult self-conquest. Thank God, this time is now over, and by the self-conquest which I had to learn in connection with it, quite another and new, a truer, and therefore better, conception of the world than I had before has dawned for me. But, as it happens with every progress in our human, terrestrial life, at every step forward, at every step which after much trouble and effort we have mounted upwards, a new battle ground is again opening before us, and a new aim demanding fresh struggles and new strenuous effort beckons in the distance. Thus I am also becoming more and more convinced now

that, in reality, this quite short span of life is only destined for continual fighting and wrestling, and that it would be vain and unjust to expect peace and rest here. But with every victory won the fight becomes all the more difficult: for only thus can strength be braced up and continually increased. Thus, now that after a long time and years of groping and wandering in the dark I have at last climbed up to a new stage of light and recognition, I can also see that a number of new and previously unknown errors and temptations are lying in wait for the youth who is entering upon the world, and these demand caution and meditation. There is one matter that now occupies me a great deal, and the more I try to discover light and truth in it all, the more dark and confused it appears to me. It is the relation of our modern science, the most ardent apostle of which it is my greatest pride to consider myself, to Christianity on the one hand and materialism on the other. The farther that research penetrates, the clearer and simpler the general natural laws develop and can be reduced more and more to purely mechanical conditions and, finally, at last, to mathematical formulæ (which, after all, is contemplated to be the highest aim also in organic natural science), all the nearer lies the thought and all the greater grows the temptation also to seek the last cause of all things in such a mechanical, blind, unconscious, natural law which knows no exception, and to extract all

the consequences which modern materialism deduces from it. The consistent and rational natural scientist, marching forward step by step on a mathematically defined road, as a matter of fact in the end finds himself in a fix and a dilemma out of which, if he follows the evidence of reason and his five senses alone, he searches in vain for a means of exit, and of which the layman, who is a stranger to the details and thereby also to the spirit of natural science, has, indeed, no idea. And do we not daily see that the greatest heroes and the leading lights of our modern natural science lose their way in this labyrinth, succumb in this struggle and finally take their refuge in the purest most overt materialism as the only means of salvation? The Vogt-Wagner quarrel, about which in the course of barely a year a whole library has already been written, is a speaking witness to this! And yet, how empty, how superficial, how insipid is this rational conception driven to its culmination point—and how unsatisfied and comfortless it leaves the soul that is striving after truth and enlightenment! After all, with all their sagacity and their sophistry, people always arrive at one point where they seek in vain for a way out, and, with their restricted human understanding, must confess to themselves that they can progress no further. It is the point where knowledge ceases and where faith, which they would so much like completely to deny and abolish, begins. And yet

this faith, which has found in Christianity its most complete and truest expression, is the only anchor of salvation for the soul, which seeks in vain for other comfort and other satisfaction. Also I myself can only find comfort and peace in this Christian belief, which is contemplated by so many and such important minds to be mere ridiculous foolishness, by my admitting this life of faith as a sphere quite apart from the life of knowledge and understanding based on the evidence of our five senses, which is not only possible side by side with it but also necessary, just as justified and even infinitely more important . . .

Your faithful nephew ERNST H.

80. WÜRZBURG, *2. 2. 1856.*

DEAR PARENTS,

. . . The carnival pleasures which find such a lively and warm reception on the part of the people here and which are carried out with so much splendor and extravagance have passed without leaving a trace, as far as I am concerned. If I had felt inclined, I could probably have gone to a ball every day; but the two first Harmony balls after the new year, at which I was present, have thoroughly taken away my appetite for further delights of the dance. I must admit that this might also be due in part to my way of regarding the local balls, which I look upon essentially in the light of gymnastic exercises, for which reason,

anxious to do my duty, I danced every dance on the programme, without allowing my body during the whole of the time any refreshment whatever, whereby I learnt quite excellently to fast in the midst of the abundance that surrounded me. As a matter of fact, the Würzburg ladies are of such quality that one cannot contemplate the thing in any other light. At least, I endeavored in vain to begin a reasonable conversation (which I must therefore save up altogether for Berlin) with one of them, and as for flattering them about their figure, hair, eyes, amiability, etc. (with which their other partners entertain them), I have not the remotest inclination for this, nor can I perceive any justification at all for it. Therefore I leave them alone! . . .

In the infirmary there have been less interesting cases than before Christmas, when it was simply overflowing with them; on the other hand, however, there take place some very strange post-mortems, about which I am now quite keen. The demonstrations and lectures by Virchow, which accompany the post-mortems and follow them, are quite delicious, and nowhere else could one hear anything like them. If I had not such warm love for zoölogy and botany, to which I shall always remain faithful, I would choose pathological anatomy before anything else, but specially histology . . .

Your old Ernst.

81. WURZBURG, *17. 2. 1856.*

DEAREST PARENTS,

First of all, the heartiest, most fervent thanks for your invaluable parental love which you have shown me again in such a cordial and sincere manner on my birthday by so many tokens and words of love. It is my most ardent wish, and which was also yesterday strengthened in me till it became a firm resolution, to make myself more and more worthy and deserving of this your precious parental love, which to me is always the most valuable and on every occasion and under all conditions the most comforting and most pleasurable gift, and to return your kindness and fidelity as gratefully as possible by a strong continuous striving after the true and the good, as far as this lies within my power. . . .

What infinite thanks I owe to you, my kind loving father, for having forced me, against my will, to continue the study of medicine *ex fundamento* and to the bitter end. What extraordinary advantages have I gained thereby! Indeed, I believe that there is no better or more thorough school capable of stripping off all the numerous hereditary and acquired prejudices, and of teaching how to acquire a true and naked conception of things as they actually shape themselves in real life, than the study of medicine, which, as Virchow rightly says, is, in reality, the study of man in respect to his body and mind, anthropology in the most complete

sense of the word. In connection with this, how much has the clinical hospital practice, unimportant as it was from the scientific point of view, opened my eyes! And what a calm outlook into the future does this recognition afford me! Although the natural scientific, theoretical knowledge of normal life, of the vegetable and animal wonder-world, will always be my favorite occupation and the chief aim of my study, nevertheless, I could now reconcile myself to medical practice, which even a year ago I would have thought to be simply impossible, without much difficulty. And, according to the plan of my life as it now lies in front of me, I shall have to reconcile myself to it soon enough. I feel almost inclined to say that I have become really healthy only through the study of disease, at least the condition of my constitution as it is now, that is to say in general, is a decided state of (comparative) good health—compared with those hysterico-sentimental childish follies through which during the last seven terms I embittered my life and that of others. I believe that this happy progress is already apparent from the fact that since the beginning of my magnificent Alpine journey I have not even once had a recurrence of my so-called moral fits of the blues, which previously, as you know, were a part of the regular and necesary events of every week with me. And now if I ask what in reality has produced this happy change of mind, I always come back again to medicine, into the study of

which I have plunged this year up to my neck. But chiefly it is to genial Virchow that I owe the deepest gratitude: through his method, indeed the only true and correct one, he has given me a taste for medicine, that is to say, for the study of the sick man, which, but for his natural scientific treatment, would in truth have remained for me, as it had for so long till now, the same old lumber heap of unfounded theories and crude empiricism. I cannot tell you what extraordinary elevation, what high degree of advancement, not alone of special medical training, I owe to Virchow. If you were not in Berlin now I would not hesitate to remain here still for another year, because just now the position of assistant to Virchow will fall vacant. I would surely get it without any trouble, and could then make myself quite conversant *ex fundamento* with all the details of special pathological anatomy, about which I have acquired nothing but a superficial idea, and of which I am now standing on the threshold. Yet who knows what advantage it will be to me that I now turn once again to other subjects and learn to move in another sphere? . . .

20. 2. 1856.

. . . In my clinical hospital practice I have now to attend the most remarkable old, old witch that can be imagined. I really thought that I had discovered "the old woman with the spindle" in the fairy tale of "The Sleeping Beauty in the Wood."

At first, up various ladders and through some old passages; I had then to climb up an old dilapidated staircase, which was near to falling into pieces, and under the low roof of an old tower-like watch-house, where, in quite a miserable little closet, thickly covered with a veil of cobwebs, which had probably not been cleared away for years, the garret windows of which were pasted over with paper, I saw a very old, hoary woman, with a face as yellow as a quince, and parched to a skeleton, sitting before a spinning-wheel. Although rather accustomed to such shuddering scenes, my flesh involuntarily "crept" and some time had elapsed before I could begin the usual medical conversation with her, through which I learnt that she had already been sitting here quite alone for seven years, crippled by gout and old age. It was only at midday and in the evening that a niece brought up some food to her!

In addition to her, I am also blessed with old women. One fine day I attended two samples at once, one more hideous than the other. Yet one of them had a very pretty foster daughter.

Last week in a hovel in the Main quarter (on the further side of the Main, a veritable district of squalor and misery), I had to visit a nest of half-a-dozen foster children, the most wretched worms that one can imagine, suffering from rickets, scrofula, eye diseases, etc. On the whole, however, it is very remarkable with me in my clinical occupation. Till now not a single patient has died

(although I had a few very dangerous cases), whereas with an acquaintance of mine ten out of thirteen have died! My fellow students envy me for this, while I am very sorry, because thereby I get no post-mortems, which with all sick people is for me the most important—yea, the only interesting part. In order to compensate me for this bad luck, which the others call good luck, last Sunday Professor Rinecker made me undertake a post-mortem quite alone, from A to Z, from his private practice (a five-year-old girl with *meningitis tuberculosa*, a very beautiful and well-defined case!), during which I made such excellent use of all I had learnt with Virchow that the professor repeatedly and very flatteringly praised me, even to Virchow himself. But, indeed, there is nothing I am more keen about than dissecting. I run for several hours for a single one, just as eagerly as formerly for a rare plant!—*Tempora mutantur et nos mutamur in illis!* The prospect of independdently making very many post-mortem examinations is, after all, the only attraction which could induce me to practice medicine. I am regarding the post as assistant to the professor of anatomy as being quite a magnificent one, for instance, that at the Infirmary, concerning which the rumor (?) was spread to-day that it would be entrusted to Virchow, with the prospective foundation of a professorship of pathological anatomy. That would be splendid . . .

Now I must still tell you of a great joke that has happened to me, although it is not at an end yet.

At the beginning of this term Virchow made me the honorable offer of working up some selected lectures of his demonstration course (pathological anatomy and histology), specially with regard to rare cases and less-known subjects, and to send them to Vienna to the *Wiener Medizinische Wochenschrift*, the editor of which, Dr. Wittelshoefer, has asked him for more frequent contributions. Although I made sundry objections (about non-capability, want of time, etc.), and thus tried to get out of it, he pressed me so hard that I seriously resolved to make the attempt. Soon afterward there occurred two very strange cases of typhoid (nerve fever) which were exactly appropriate for it, and in connection with it Virchow made a classical lecture about the "relation between typhoid and tuberculosis." Therefore I worked this up and sent it to Vienna. It appeared in the first two numbers of this year's series (1856) of the *Wiener Medizinische Wochenschrift*. Thereupon there appeared—but I will let my editor speak for himself. In an editorial note to the second article on "fibroid of the uterus," which appeared a few weeks later in No. 7, he wrote as follows: "We must observe emphatically that the articles appearing under the heading 'From the pathologico-anatomical course of Professor Virchow at Würz-

burg' are worked up by permission and under the supervision of Professor Virchow, and that in part they refer to very interesting cases and in part to such chapters as the celebrated professor has not published hitherto. We made a similar statement already a fortnight ago in anticipation that in the malign meanness of the Czecho faction of the so-called 'Viennese School,' with their parasites, they would oppose us with their well-known vulgar insinuations—but our statement was ignored. Herr Heschl of Cracow, as scribe of the Austrian-Czecho faction, took it upon himself, in a communication to Herr Haeckel, which was couched in terms of unusual cynicism, to oppose the views of Virchow as expressed in our articles in the *Zeitschrift für praktische Heilkunde.* It is not our task to criticize the material contents of that article; the person attacked will best know how to defend himself. But we must throw a light ourselves upon the perfidious insinuation which was intended as an attack upon us, etc., etc." This is a short account of the facts. In the meantime Virchow has written a reply to my aggressors, which will probably appear in the next number, together with my third composition on "Ovarian cystoids." He also left it to me specially to defend myself if I desired to do so, but for which I did not in the least feel inclined, as I am still far too young a recruit! But how sweet to be attacked for Virchow's sake!! . . .

But now, dearest parents, let me greet you for the last time from Würzburg! How immensely glad I shall be to see you again so soon. I can scarcely await the time! I feel as though I had never felt so immensely happy before about my home-coming.

Once again, the heartiest thanks for the beautiful birthday presents. You have made me quite particularly happy with the collection of Virchow's essays, which I am now reading with true delight. Thus, for instance, the very first one of all, "The Efforts for Unity in Scientific Medicine," is quite delicious, and I could never grow tired of reading it . . .

Now, then, the last happy "good-by"! In three weeks from to-day I shall be with you! Hurrah!!! Your happy old 22-year-old boy

ERNST H.

82. WÜRZBURG, *Wednesday, 23. 4. 1856.*

MY DEAR PARENTS,

"*Alea jacta est*—the Rubicon is crossed—I have just signed—. . ." These were the words with which my honored teacher and present principal Virchow surprised me last Saturday at the Anhalter railway-station, in order to announce to me his definite acceptance of his call to Berlin; with the same words I now present myself as his newly constituted assistant, under the title of "Royal Bavarian assistant at the Pathologico-anatomical

Institute at Würzburg," at an annual salary of 150 gulden, which, however, in any case, will be paid for only half a year! Thus a series of hopeful new prospects has been opened out to me. It is certain that Virchow will go to Berlin in the autumn, and I have now become his assistant here for this summer, in the hope that I may continue to be the same for some time there. Therefore, we can now be heartily glad about the winter! The much-dreaded examination was undergone very successfully this morning. In reality the day fixed for it was to-morrow (Thursday), but as Virchow told me yesterday that if a subject should be available it could take place to-day and when I heard this morning at 9 o'clock of the arrival of a corpse at the School of Anatomy, I lost no time in hastening to Virchow. There, accidentally, I met a rival, who had abandoned his competition this morning and had just given Virchow notice of his withdrawal. I was therefore relieved of a great burden! From Virchow I went immediately to find the Dean, Professor Narr, for whom I searched in vain for a whole hour. At last, at 10 o'clock, he came home and immediately put up a public notice at the Julius Hospital, announcing that the examination would take place at 10.30 (which had the great advantage that only a few students could have the opportunity of reading the notice and of honoring me with their presence during the examination). At 11 o'clock it took place in the presence

of Professors Virchow, Kölliker and Narr (the latter in his capacity of Dean), and at 1 o'clock I was the assistant! The dissection was interesting, but not difficult (hæmorrhagic pleurisy on the left side, chronic bronchitis on the right side, complete adhesion of the pericardium to the lungs, the diaphragm and the heart, chronic endocarditis). Dr. Grohe, the former assistant, wrote down the protocol which I dictated. After I had made the autopsy, Virchow made me draw lots for one of the three subjects on which I had to make an extempore lecture. As good luck had it, I drew: "Histology of the tubercle and the structures closely related to it." As I had specially studied it (when I supplied the articles to the *Wiener Medizinische Wochenschrift*) the whole story was simply child's play to me. I did not even make use of the time offered to me for consideration, but immediately began the lecture quite extempore, which was absolutely no trouble at all. To-morrow I enter upon my new duties, and shall take over the pathologico-anatomical museum. Hurrah!!! . . .

83. WÜRZBURG, *Thursday, 8. 5. 1856.*

DEAREST PARENTS,

It is exactly a fortnight to-day since I entered upon my new appointment, and consequently it is about time that I told you something about it, particularly as I have become rather accustomed to it and have settled down to my diurnal routine.

The first week was more difficult for me than I had feared, and the most miserable feeling, without courage or comfort, with which I have hitherto begun every term (but have not ended one of them in the same manner), was also not lacking this time. But certainly there were sufficient reasons for it now. The contrast between the sublime life of the last weeks in Berlin, where I dwelt, extremely happy, in the circle of the many dear ones no less than in being occupied with my plants and animals, and the new life I have had to begin here now without all these joys and pleasures, was too great to prevent the intense conflict between desire and duty, between sentiment and reason, coming to a new outbreak. Above all, at first it was the thought of my abandoned zoölogy that would give me no rest, day or night. Like the picture of a faithlessly abandoned lover, the highly enjoyable hours that I owe to this my unforgettable favorite study, constantly stood before my soul, and I felt that it was almost treason to myself, to my best will and aspiration, that I had now so completely turned away from it and had diverted my attention to an altogether different field of natural science, which was originally much more of a stranger to me. I am quite unable to tell you how tormenting this thought was to me. The whole of the present position which I have now acquired so easily and which at the end of the last term seemed to me to be worthy of the most strenuous endeavor,

appeared to me now when I really possess it to be so unimportant and unthankful, so low and despicable, that I did not understand how I could have preferred it to the divine enjoyment of working with Johannes Müller this summer. Gloomy and melancholy, I wandered through the bare rooms of the pathologico-anatomical museum, and thought longingly of the treasures belonging to comparative anatomy in the other wing of the anatomical building, over which Beckmann was now the absolute ruler. Strangely enough, the latter envies me for my pathological studies and duties in exactly the same manner that I envy him for his zoölogical ones, and it was exceedingly comical to hear us mutually complaining in the evening about our misfortunes and how one envied the other. It was exactly the same story of the two couples in "A Midsummer Night's Dream," who had unrighteously fallen in love with one another through the agency of Puck! May God grant that, after all, an Oberon will appear who will guide each one into the arms of his true love! To this eternal misery there still came the more external and uncomfortable feeling which the unacquaintance with all the duties and obligations attached to my office caused me, and the finding of my way through the overwhelming masses of material which were solemnly handed over to me from Thursday, 24. 4., till Saturday, 26. 4. In short, during this first week I felt myself so highly uncomfortable and comfortless that it

would not be worth while any further to describe this miserable state to you, but I know that you follow the doings and life of your boy with the most loving sympathy, even in his weak and unsatisfactory hours. At last, on Monday, 28. 4., that is to say, after the lapse of the first week, as with one stroke the turning of my thoughts toward courage and hope, to energy and love of work, began, and I am willing unalterably and continually to keep them up to the same satisfactory pitch during the whole of this term. The prospect of this precious time which is still in front of me in Berlin for the next term, and specially the firm hope to be able still in the end to give myself up entirely for once and all to my most beloved one, to zoölogy, endows me with courage and strength to make the best use of the extraordinarily educating, although not pleasant position, which, after all, I now occupy only as a transitory exigency, and to turn it to the best possible advantage. What in the beginning of last week lifted me so suddenly out of my self-tormenting moods and melancholy, which were specially nourished by the fact that, in reality, I did not know what I ought to do, was the simple circumstance that all at once I became completely aware of the latter, that is to say, that I had so much work to do that if business is going on like that with my official work I shall not have spare time in which to prepare an essay. It is true that my work as an assistant will not absorb all

my strength uninterruptedly as it has done in the last days. Often for weeks scarcely any corpses for dissection arrive, whereas now, at the sudden commencement of the extraordinary cold and damp, unpleasant weather which is still lasting to-day, all the patients who in the preceding beautiful days of April had become seriously ill died all of a sudden like flies, and this overcrowded the School of Anatomy with so much material that we were scarcely able to keep pace with it. Nothing can be more desirable for me at the beginning than such an almost superabundance of work. There is not a spare moment left for me to give myself over to useless, egoistic thoughts, and I am so much driven from one work to another, that all my forces and wits must necessarily be concentrated upon them. But in a mood and a position like this present one, this is exactly the right thing for me. When I know so very distinctly and clearly what I have to do, and can then hasten restlessly and untiringly during the whole of the day without interruption from one completed work to another, then in the evening I feel quite happy, and I think with rejoicing that in any case the day has not been wasted. At the same time one glides in this manner so absolutely and completely, and at the same time so rapidly and comfortably, into the new position that one does not perceive the difficulties of it at all. This is the case with me now, thanks to the happy elasticity of human nature. I am now already as

completely at home in my new sphere of activity as though I had worked in it for half a year, and on the whole I am comparatively quite satisfied with it. In it I can still learn much more than I had previously thought I would, although at the same time there are many unpleasantnesses connected with it which I had not anticipated would be so great. Yet it is all still too new to me for me to be able to judge of it completely, and I must therefore reserve a full description for a later letter . . .

I rise regularly at 5 o'clock, slowly drink my so-called coffee (a decoction of various dried roots, etc.), during which time I repeat my normal anatomy from my magnificent Atlas by Froriep, and at 6 o'clock I am already at the School of Anatomy, which from then, with the exception of the midday hours from 2 till 3, is my continual abode till the evening at 7 o'clock. During this time I generally remain in Virchow's working room, a small one-windowed room which looks so confusedly mystical and admiredly disordered that a witch's kitchen, or, better still, the laboratory of an alchemist of the Middle Ages, could only give you a faint idea of it . . .

After all, how much can one change! A year has not yet passed since I could have jumped out of my skin at the bare idea of a surgical operation, and now I am already performing these things myself as coolly and quietly as though I were dis-

secting a frog. What cannot habit achieve! Gradually I begin to believe that a man with a serious will is capable of training himself to all possible things . . .

Three times a week, from 6 till 7 o'clock, my dear good Beckmann reads his first lecture, a repetition of zoölogy, which I also follow, although, far inferior to him in other things, I have exactly as much knowledge about this as he has himself. Nevertheless, it gives me very great pleasure. From the very beginning, Beckmann's delivery, as I had expected it would be, was very good, and I surely believe that some day he will have great success as a docent. On the whole, I am on as excellent terms with Beckmann as I could wish. The very disturbing foreign elements which mingled in our intercourse last winter are now very happily absent, and thus I get along with him alone quite excellently now. Beckmann's remarkable personal amiability and modesty, his rich natural scientific and general knowledge, make his intercourse with me exceedingly pleasant, and he also seems (in respect to my serious humanitarian endeavors) to be much more satisfied with me . . .

The most delicate and the most difficult thing about my present position now is my relation toward my chief, of which, however, I shall only be able to tell you later when I know more about it myself. Till now Virchow has been very nice and friendly to me. Yet he is far too reserved and

cautious for me to be able to judge whether he is satisfied with me or not. At first it appeared that he was not. My whole character, my whole manner of treating things, is so different from his own that he could scarcely approve of it. Unhappily I have not received from nature the slightest trace of the divine calmness, coolness and consistency with which he, ever the same, conceives everything highly objectively and clearly, and my haste, heat and unrestfulness are not very agreeable to him. How often during the first days, when I was taking over the collections, etc., from my predecessor, Dr. Grohé, who knew how to adapt himself completely to Virchow and who likewise has much more of a congenial nature, had I to listen to words like these: "No, that will not do here like that, dear Haeckel; only quiet—cool—dry! Why all the haste and excitement? Only quite gently and calmly, and everything will proceed much better!"

Now, after all, I shall have to get accustomed to it, and it will be very beneficial to me if I adopt as much as possible this coolness and calmness. In any case I have the best opportunity for doing so, as from 10 o'clock in the morning, when Virchow comes to the School of Anatomy, till 7 or 8 in the evening I am almost constantly with him. This continual close intercourse with such a man as Virchow will altogether be the most advantageous and most profitable side of my assistantship. It is

really most interesting and instructive to follow and to see the whole day long such a tremendous genius in all his movements, how he begins, penetrates into and combines all things—in a word, to see him work and create.

Certainly by the side of such a gigantic spirit I feel all the more what miserable worms I and most of my fellow students really are, and one actually feels inclined to despair altogether of one's own ability. But for the moment for once I think of completely abandoning all self-thought, and of striving as well as I can to follow and train myself after his extraordinary example. The former assistant, Dr. Grohé, who is remarkably obliging, officious and attentive, and who has now quite spoilt Virchow in this direction, has created somewhat of an awkwardness in my position toward the latter. Under these circumstances it is doubly difficult for me, who know nothing of this by nature, to win Virchow's approbation. Nevertheless, I shall do my utmost to adapt myself to such close personal services, especially as I have dedicated this summer entirely to this office. In any case, there is no time to work for myself at anything else, and, moreover, there is much that is pleasant in devoting oneself for once exclusively to one branch without being distracted by others.

Naturally, my relations with the other professors are very pleasant, as well as with the students, who pay me great respect, which at first was not a

little flattering to my vanity, but to which I have now grown quite accustomed . . .

Heartiest greetings!

Your Ernst.

84. Würzburg, *20. 5. 1856.*

Dear parents,

. . . On Whitsun Day I went again early to church, for the first time this term, and it will also probably be for the last, for, as a rule, on Sundays (when Virchow will always visit his family at their summer residence at Veitshöchheim) I shall have just as much to do as on the other days, and, secondly, I must confess that the capacities of the preachers here are in my opinion far from satisfactory. Putting aside the fact that the Divine Service here is already inclining very much toward that of the Catholics, which, if possible, is probably still more despised by me than by yourself, dearest mother, the dogmatic-orthodox standpoint, which is universally accepted here and which affronts our natural science convictions based on facts, also, necessarily, cannot be very agreeable to myself; and a Christian rationalism, as Sydow declares in his excellent sermons, or an ethical humanism, as Weisse (the Leipzig philosopher) expounds in his essays, or perhaps both together, constitute for my present religious conscience and needs the only suitable standpoint. Nevertheless, I am still of the opinion that each one can and must firmly

create his own religion for himself, according to his individual peculiarities, and that the words of Schiller: "*In seinen Göttern malet sich der Mensch*" (Man is reflected in his Gods), are in this respect surely very true. I am impelled all the more to this freer and more independent conception, the more strikingly and repulsively the superstitious formalism and the quite un-Christian image worship, the priest rule and Mary cult of Catholicism, confront me here now in these Whitsun days and the time of festivity following it, the acquaintance of which in its most disgusting excesses I already made last autumn in the Tyrol and in Upper Italy. May it be ousted more and more by enlightenment and true education, for the propagation of which we natural scientists are specially capable . . .

On Whit-Monday, the weather being fairly good, we took a special train to Veitshöchheim, where in the great park, laid out and trimmed in the old French style, a real Bavarian (that is to say, beer) people's fête was taking place. But as the one is just as despicable to me as the other, the Bavarian beer national life if possible still more than the abominable French rococo style, very soon I withdrew from my friends, who tried in vain to amuse themselves in the noisy crowd with bad beer, and I climbed up through the vineyards to my beloved old Edelmanns-Waldspitze, the same prominent edge of the wood above the high vineyards to which I dragged you up, too, dearest father, during your

stay here. There, amid the magnificent green foliage of May, under the wide blue sky, I felt in a very fervent and uplifted mood, and nearly became sentimental. Indeed, the whole environment filled me to the depths of my heart with silent happiness, "rejoicing in my God," as old Hein says. But now, as I entered for the first time from the dark, dead anatomical school and my cell of a study, into the fresh splendor of spring, this was redoubled bliss for me. And then, the wonderfully magnificent view from the high point of the wood, up and down the smiling Main valley—along the blue stream the numerous cheerful little villages, with their red roofs and slender church spires nestling in the fresh May verdure of the orchards; the solemn calm of the festival day, only interrupted by the merry piping of the finches and the melodious trill of the nightingale, overspread the whole scene; and then the wonderful play of the wild wind with the swaying clouds, which, rolled together and massed into the strangest, most adventurous shapes and fanastic forms, it drove in front of it, and how on the southwestern horizon they all towered together in a great encampment, just as once before I observed such a cloud formation on the Watzmann!—all, all this together produced such a unique, delicious spectacle that I felt as though nature had prepared for her darling, or rather her lover, quite a special festival pleasure, of which all the thousands of people crowded in

the narrow comfortless artificial garden had no idea; and there was I, lying up there for several hours, quite enchanted and blissful under the green trees, throwing myself out in ecstatic joy into the wide valley of the Main, and missing nothing but you Berlin souls to make my joy complete. But this spot of earth here has now become my favorite one in the whole of the surroundings of Würzburg. How often have I lain down here for hours quite alone with my nature, and have brought back with me to the cramped existence in my room and study, strength and refreshment in the scent of the woods and the air of the mountains! It is exactly from this point that I have already taken leave of the Würzburg country more than three or four times, always with the idea that I would never return to it; and yet I have always come back, and each time to new advantage and profit. Thus, a short time ago, in the beginning of February when I was there for the last time before the vacation, I believed that that would surely be the last time for ever—and now, contrary to all expectation I was there once more on Whit-Monday, 1856, and, as I surely believe, only for a new advantage to my inner development. Following this thought, I became filled with joyous thanksgiving to God, who, without any effort being made either by you or by me, has guided me so successfully during the precious time of my studies, and who has always led me back to this place, undoubtedly for my

greatest benefit. What would have become of me if I had always remained in Berlin! An extremely dull, misanthropic Philistine, a narrow-minded bookworm, and, in any case, also no medical man! When I except Johannes Müller, who, I must admit, has had quite a decisive influence in the direction of my favorite study, I owe everything else that I am and have acquired in respect to science to old Würzburg with its inspiring and vigorous teachers, its lively scientific tendencies and its sound common association. How much have I learnt here, and how much have I altered! All those thoughts came so vividly into my mind on this beautiful Whit-Monday, and brought me into such a happy mood of contentment that I thought I had never had such a joyous holiday, and in the most serious manner I renewed the firm resolution I had made, that I would pursue the lofty aim of the "true, good and beautiful" with the exertion of all my strength. These were hours of an elevated mood, and I know well that I am not so sure and confident that they will not once more be followed by hours of faintheartedness and despondency.

But let them come! Such uplifting hours always give me strength and courage for a long time, and gradually I acquire a somewhat firmer, more constant equanimity, a more settled, manly character, to attain which I am now passing through quite an excellent, although not a very pleasant school, in my assistantship with Virchow . . .

WÜRZBURG, *21. 5. 1856.*

. . . I have now become quite accustomed to my new official conditions. As I have already written to you, the first three or four days were very difficult ones for me. Now that I had to surrender it so suddenly, I found for the first time that I could thoroughly appreciate the sweetness of academic freedom, the happiness of disposing of my time exactly as I wished. Surely I have always been accustomed to continuous work; but that I had for once to do something not only for my own development but also for others, appeared to me at first to be very repugnant. But fortunately there was soon so much work to be done that I had no time to brood over it. With one jump I fell completely into the sphere of activity, and after a week had passed by I was already quite accustomed to it. Now I feel as though it could not be otherwise, and everything appears to me to be quite easy and natural. As I had foreseen, all the many unpleasantnesses of the delicate position are more than counterbalanced by the great advantage which it has for the development of my knowledge, as well, especially, as of my character. There is daily a greater demand upon it, but gradually it is able better than ever before to stand every test and task. It often seems to me to be almost incredible that men can eradicate even the most deeply rooted and most firmly engrained weaknesses simply through progressive habit. Sights and thoughts,

at the mere mention of which I believed only a year ago that I would have jumped out of my skin from sheer sensitiveness and sensibility, I now suffer with the same equanimity and indifference with which I follow any mathematical process. The scientific interest undoubtedly helps one to overcome many difficulties, and, besides, my present daily work is exactly adapted, more than anything else, to rid me of such weaknesses. Thus, for instance, the first post-mortem that Virchow handed over to me altogether to perform by myself was on a medical student, Schmitt, of Lippspringe, to whom this last winter I had been talking almost regularly throughout the whole of the nights in the lying-in hospital. Even shortly before Easter he had wished me a merry farewell "till we meet in Berlin!" And now, instead of that, he was lying on the dissecting table before me, having died from acute general tuberculosis. Another hard trial was happily overcome the day before yesterday. Hitherto I had always made the dissections only in the presence of a few doctors or students, but two so-called "clinical dissections" were announced to take place the day before yesterday, and during them not only the whole of the clinical auditorium was filled, but the professors were also present. As a rule these are made by Virchow himself, and I have only to write down the protocol. The day before yesterday I passed through the dissecting room shortly before they were to begin, and when

I saw the great crowd I said to myself: "You are lucky not to have to make the dissection!" This had scarcely crossed my mind, when the servant came rushing to me and cried: "The professor has sent me to say that you are to make the two dissections; he has to go to the station to meet two gentlemen from Berlin!" Here was another bolt from the blue, quite sufficient to make me lose my head altogether. However, it had to be done! The audience was there, and whether I wanted to or not I had to make the two dissections (two cases of pneumonia, almost exactly similar to one another), *extempore* in the presence of Professor Bamberger, etc. Naturally I began by cutting my finger several times with trembling hands (happily without any evil consequences), and it was only with difficulty and with a choking voice that I made the opening observations. But after the first quarter of an hour all my nervousness had disappeared, and I went through with my task without further embarrassment. Contrary to all expectations, I have also become quite accustomed to the surgical operation course, and to my satisfaction I observe there daily that I am far from being the most clumsy one, as in this I am decidedly surpassed by several older ones. Yes, the systematic amputation of arms and legs, the exarticulations and trepannings, etc., even begin already, although more as *curiositatis causa*, to afford me some pleasure. So the last barrier which I feared would

make it impossible for me to become a doctor, and which I had believed to be unsurmountable, has fallen, and I am already so far reconciled to the thought of becoming, in case of need, a practicing doctor, that the realization of it no longer appears to me to be so impossible, especially when I think of a very nice family life in connection with it, a happiness surely quite unique in its way! But before that I must travel! The joy of traveling is far too deeply and ineradicably implanted in my whole being that it could be subservient to any other consideration, and on such beautiful days as to-day and yesterday have been it makes my legs tremble as though I ought immediately to climb up the Watzmann! The powerful development of my muscles which I acquired on the journey last autumn is now with much sitting really inconvenient. I have altogether far too energetic a carcass for an eternally sedentary life, and I must absolutely go forth some day and wander through the world for a few years! I do not yet know how I shall be able to stand the whole summer here in this narrow little spot!

With regard to my personal relations with the chief, now the most difficult question, they are not yet quite as they should be! And it will scarcely become different; surely never easy. If Virchow would only not be so extremely reserved and never indicate in the slightest manner what he really wants and means. Thus, for example, he has never, even once, spoken a word of praise or blame about

what I have done, although he has had abundant occasions for the latter. He looks at everything with such astounding calmness, unmoved and objectively passive, that daily I learn more and more to admire his extraordinary stoical calmness and *sang froid*, and I shall soon estimate it as highly as I do the remarkably clear sharpness of his mind and the wealth of his learning, If he could only bestow some of it upon my bubbling, sparkling spirit! Well, it will be all right in time! Now, at least, I have advanced so far that I think over every sentence I say to him for a quarter of an hour, and even then I turn it around ten times in my mouth before I utter it. Thereby I shall surely learn silence magnificently! The only reason for my doing this is that during the first time when I blurted out my thoughts quite unrestrainedly, as I had been accustomed to do, I either burnt my muzzle so much that afterwards I stood as though I had had a cold water douche, or I was led by him *ad absurdum* to such an extent that I felt I was the most trivial worm among all the stupid people. The most satisfactory retort that I have been able to extract from him hitherto was when I communicated to him an idea that had struck me concerning a microscopical observation, and from which I had promised myself wonders. "Yes," said Virchow in his usual calm manner, after he had listened to me, "at a certain period of my life I had also once the same idea myself!" In com-

parison with this quiet, clear, sharp greatness, how often have I cursed the triviality of my unrestful spirit, which flutters to and fro like a will-o'-the-wisp and can never detach itself definitely and distinctly from its own self! How little is such a cloudy, confused, subjective being fitted to be a naturalist! And yet, there are hours when I would not like to change places with Virchow. Can Virchow ever enjoy such a charming pleasure as I do so often in my subjective contemplation of nature, be it of a beautiful landscape or of quite a dear little animal or of a pretty plant? Surely not! It would be terrible, too, in this world if all men were so matter-of-fact and reasonable; nearly as terrible as though they all possessed such crazy, chaotic brains as those of my humble self . . .

85. WÜRZBURG, *11. 6. 1856.*

MY DEAR PARENTS,

. . . I have been working for nearly a month on the subject given to me by Virchow for an essay, without arriving at the slightest result. I am to investigate the nature and the manner of the formation of small cysts, which are very frequently found in the network of blood vessels (*plexus chorioidei*) in the cavities of the brain; this is a confoundedly delicate and difficult subject, and for my rough hands, and particularly with my restless impatience, rather too delicate. Already I have often enough completely lost courage, and sometimes, after I have

been sitting from two to four hours behind my microscope without any result, I would like to run away. But my motto is: "Stick to it!" and at all events it teaches me patience. But of hope I have little . . .

Last week, as an exception, there was very little to be done. Absolute immortality seemed to have entered into the hospital. All the more time wherein I could work at anatomy. But the day before yesterday, as well as yesterday, there were suddenly three post-mortems, so that I had more than enough to do. During the great heat the post-mortems, with their dirt and stench, the corruption being greatly accelerated at the same time by the considerable humidity, become very unpleasant now, even for Virchow himself. But I have now thoroughly overcome every kind of aversion and terror, have so completely thrown off the whole load of prejudices and moods which I dragged along with me as a snail drags its house, that absolutely nothing of all the horror, and for the layman gruesomeness, which there is in medicine can any more in any way put me out of countenance. How one can change! When, in 1852, I began as a miserable "fag" to make anatomical preparations, I could only pick up everything as far as possible with forceps and rags, and if by accident I cut my finger, even over quite a healthy subject, I immediately cauterized myself with lunar caustic so strongly that the wound suppurated for six weeks afterwards. Now I rummage, even with

torn and scratched hands, in all the foul matter as indifferently as though I were arranging plants, and, up till now, nothing untoward has happened to me. The absolute indifference with which one regards death is really strange, and I would never have thought that I could stand all this with such stoical calmness . . .

My personal relations with Virchow always remain the same, cold and objective, and this is certainly highly advantageous to me, for the reason that thereby I get thoroughly rid of my terrible subjectivity. But while it lasts, there is something sad about it, and I would render my little services with much more readiness and attention in every respect if at the same time he would approach me more sympathetically. How much happier has been the experience of Lachmann with his divine Johannes Müller, to relieve as far as possible the most tedious and unfertile trouble of whom must be a real pleasure! . . .

Now I take somewhat more regular exercise. My plethoric carcass cannot stand the everlasting sitting without a break, and the good resolution I made not to go out of the town for the whole of the summer, and to squat in the School of Anatomy day in day out, has already been broken. In the evening towards 9 o'clock, I generally go to a place below the Käppele and swim about there in the Main for half an hour in the twilight or the moonlight—quite a divine pleasure. Next to mountain

and rock climbing and the "three-legged" sliding down over the sloping snow fields, swimming has for ever so long been my greatest pleasure; but since I have tasted the delights of the magnificent waves of the stormy North Sea and the mirror of the mild Adriatic at Venice, the modest rivers have no more any flavor for me. So then I try to make up for the lack of waves by the most extreme bodily evolutions, and I splash and flounder about in the tame water like a whale on a harpoon. Altogether, the wild exuberance of the youthful gayety of my childhood begins powerfully to awaken after a long and lazy slumber, and the feeling of "far, far out into the world" often seizes me as though I must suddenly escape from the narrow cage and go for a journey or into the wars. Then I look out longingly toward the blue mountains of the Rhön and the Odenwald, which are shimmering across over the high bank of the Main, and I wonder what there might be behind them, and console myself with the hope of better times. Little Beckmann has very often such a warlike fit of craziness also, and we vividly inspire one another in thought with the heroic deeds we shall perform in the next war . . .

Your old ERNST.

86. WÜRZBURG, *27. 6. 1856.*

MY DEAREST MOTHER,

. . . The enclosed pictures are meant to be nothing more than a visible token of my filial

birthday greeting to you, my dearest mother. For a long time I have not drawn anything nice, so that I have become quite out of practice, and nothing satisfactory has come of my efforts. But, as you are always glad, even with the worst work of your boy, I send them to you. Probably Aunt Berta will also have given you a large picture of Bozen, Meran and its surroundings, at least I asked her to give it to you before your departure.

Besides that, you will also get a few Bocksbeutels from me, but I did not want to send them to you now at Nenndorf, because in no case will you be allowed to drink them there. I shall bring them with me in the autumn, and surely they will taste twice as good because they have been purchased with my first hardly-earned salary. I am paid the latter now in monthly instalments of 12½ fl. (that amounts daily to 24 and 48/73 kreuzer). In addition, there came quite unexpectedly yesterday rather a nice extra remittance, which I had not reckoned upon at all. That is to say, I received from Vienna, to my surprise, an honorarium of 20 taler (say twenty taler!) for my articles in the *Wiener Medizinische Wochenschrift*. You can imagine how astonished I was at this generosity on the part of the editor and the reception of the "smart-money" (as Virchow called it)! I shall devote this respectable little sum, together with my salary, to ordering for myself a small microscope, of which I am in absolute need, at Schieck's for 50 taler . . .

Last week was distinguished here by a great festivity: the King and Queen of Bavaria stopped here for a day on their way through to Bad Brückenau. Professor Scanzoni, personal physician to the Queen, who at the same time is the Rector of the University now, took all the trouble to arrange a magnificent torchlight procession of the students in honor of the event and as the torches were supplied gratis, it really passed off very brilliantly. The five corps, with their multicolored caps and banners, naturally played the leading part in it. But also the bulk of the others, the so-called "wild" students, about 700 in number, made quite an imposing impression. When the great crowd took up its position on the large presidential square in front of the castle, the red glow of the torches completely dimmed the pale luster of the illuminations and the thick black smoke rolled like a heavy cloud. The streets and houses still show the sad traces of it to-day. I also played a rôle in it, as I conceived the happy idea, as I had done already before (1852) on the occasion of the torchlight procession in honor of Virchow, to don my large black dissecting overall, which, as a matter of fact, has become a kind of official dress for me. My long black figure, with fair hair and an old dark Calabrian hat, is said to have looked really grandiose, and excited general applause. Some took me for a member of the fire brigade, others rather for one of the devils who

brought down Don Juan; *item*, I gave a very effective character masque. Indeed, the event afforded me such enjoyment that in spite of myself I became quite frolicsome and swung my long torches about. Such a torchlight procession always makes me feel very jolly, because there is something so wild and fantastic about it, and the thought that this would probably be the last one in which I would have the chance of taking part chiefly led me to participate in it, although, in reality, I saw no reason why we should give a torchlight procession in honor of a king, and least of all the King of Bavaria. On the other hand, I was specially reprimanded from the Bavarian side, as a servant of the Royal Bavarian State, for such a lack of patriotism and such Prussian particularism, so that, in order not to spoil myself with the Bavarians, I resolved to take part in the fun . . .

Your faithful old ERNST.

87. WÜRZBURG, *10. 7. 1856.*

DEAR PARENTS,

The day before yesterday I received your last dear letter, which has made me very sad by the news that you, dear little mother, are suffering from intermittent fever. Almost greater than my grief, however, was the anger I felt against your two doctors, the one because he has sent you to such a fever-stricken spot, and the other because he treats you in such a manner. If what you say

about the latter is really true, namely that he is not uneasy about it and that he believes "that there might be something remaining in mother's system which the latter wants to throw off in this way," if he really meant that, the Herr v. M., no matter how much he pretends to agree with you in your political views, is, to say the least of it, such a duffer, or, better still (with all due respect), an a–s, as only a daft watering-place doctor can be. I cannot tell you how angry I have been about this single sentence, which must offend every rational medical man to his soul; I felt most inclined to throw the first book that came to hand on *febris intermittens* at his head! This is really too insane! Indeed, one need not be an experienced medical man to know that intermittent fever has nothing to do with mother's "residuum of disease," which, in fact, is non-existent, except in the heads of medical practitioners, but has solely and alone been produced by peculiar unfavorable combinations of the climatic and soil conditions of the places where it occurs; it is specially swampy atmosphere that is the main cause of it. Please write very soon and let me know how Mama progresses, and answer the following questions: 1) Is your apartment perhaps situated on damp, low soil (in which case you must immediately change to a dry, airy one), or has Mama perhaps taken a walk in the evening in such country? 2) Whence do you derive your drinking water? 3) Are there many cases of intermittent

fever in Eilsen? 4) How is Eilsen situated, on a river or in a swampy district? 5) How often do the attacks of fever recur? once a day? and when? 6) Up till now have they diminished or not? To ease your mind I can assure you that, although intermittent fevers are very unpleasant, they are in no way dangerous; indeed, it is in reality the disease that is the easiest and the most certain to be cured, because it is the only one against which we possess a really infallible specific remedy. It is, as you will know, Cinchona bark, and still better the drug quinine made from it; the chief of all remedies, because the only sure one . . . In case Mama has not taken any quinine yet, I am sending you the enclosed prescription, which Mama must, *whatever happens*, take. Dearest little Mother, according to it you will receive twelve powders which, however, you are only allowed to take when you have no fever, and then at first one every two hours, later on, when the fever does not recur, every three hours. In order to take away the bitter taste, you had better swallow it in a spoonful of black coffee, and after it a thin slice of lemon covered with sugar. Even when the fever is over you must continue to take the quinine powders for at least a week afterwards, but then you need to take only three to four doses a day. If, again, Eilsen is a place where intermittent fever is endemic, where individual cases of it always occur, you must absolutely leave the place as

quickly as possible, otherwise all the quinine in the world will scarcely help you, and there will always be a recurrence of it in the swampy atmosphere. . . .

But I have also been in no little anger about your doctor for having sent you to such a watering place. May all these damnable watering places, together with all their doctors, go to the devil! I cannot tell you how I hate them, and how angry I am with the doctors who send reasonable patients to such places, to which in reality only those people go who do not know how else to get rid of their money, time and boredom! In any case, the waters are always of very little assistance or even of none at all. The real effect is that these people are abstracted from their ordinary everyday conditions, they forget the customary domestic anxieties, worries and work, they have quiet and leisure, as well as the greatest possible enjoyment of free and beautiful nature. But all this your doctor would have attained much better if, instead of sending you to a monotonous watering place, where one sees nothing but cripples, he had sent you into a magnificent mountainous district, as, for instance, the Salzkammergut, which is very easily accessible, even for ladies, to Berchtesgaden, Ischl or Gastein, where in the divine Alpine air you would quickly become well again, and where you could also even have taken baths . . .

I wish you had been here at the beginning of this

week, for there was held the great 50th anniversary celebration of the foundation of the Polytechnic Society, the first and greatest in Germany, and which lasted from Sunday till Wednesday (the 6th till the 9th), and for which numerous visitors had streamed in from every direction. It was indeed exceedingly imposing. I have never seen such crowds of people at one time. The most beautiful of all was the great festival procession which paraded through all the main streets of the town on Sunday and lasted from 9 till 1 o'clock. Taking part in it were the schools, the citizens, visitors, all the members of the Society, especially of all the guilds who appeared and paraded in a really very well arranged and tasteful fashion. Most of the corporate bodies took part, festively decorated in the allegorically ornamented dress of their respective callings: in front was carried a flag, then came the emblems and the signs of the different trades. In addition, many corporations decorated a ceremonial festal car, filled with ingenious representations, which went in advance with brass and drum; amongst them the masons, sawyers, architects, whitewashers, foresters, tool-manufacturers, carpenters, locksmiths, etc. The very poetically garbed fishermen, who paraded in a very suitable and nice old-German fisherman's dress, carrying flags woven from nets, and other emblems, were the best of all. In their midst, drawn on four wheels which were concealed by reeds, there was

a large boat decorated with water-plants, sails, pennants and flags, which was directed in front by old Neptune, while under a bower, delicately woven out of nets, there sat charming little children who were netting. The carpenters, with cradle and coffin as emblems, with flags formed from wood-shavings, with compass and square as coat of arms, etc., also made a very good impression. The appearance of the carters, who formed a cavalcade, riding on their jaded screws of horses, real regiments, was very comical. The gardeners with the flowergirls were also very prettily dressed and decked out in green and white, carrying between them a gigantic bouquet of flowers with garlands. Also the tinsmiths, equipped in knightly armor; glaziers, hung around with very beautiful multi-colored glassware; butchers, in red and white, flourishing their knives; chimney-sweeps, in a ceremonial state car; goldsmiths, decorated with rich dresses; builders, driving a whole bridge with scaffolding, and workmen on a car, etc. You ought to have been there and have seen the whole turn-out, in order to form an idea of the glamor and splendor of it all. On the whole these people develop much more glamor and splendor, jest and ingenuity, than I would have given them credit for. The sorriest impression was made by the figures of the men themselves, who, with few exceptions (notably the fishermen, masons, tailors, etc.), exhibited a gloomy picture of the decadent, weak character

of our present generation, among whom one sought in vain for strong, manly old-German statures . . .

With the heartiest wishes for your speedy and complete recovery,

Your old faithful ERNST.

88. WÜRZBURG, *17. 7. 1856.*

DEAREST PARENTS,

. . . I thank God that our dear Mother has somewhat improved. I cannot tell how much the thought of her, especially the well-grounded fear of her being in the hands of a miserable quack, has tormented and worried me day and night. This one distracting thought has scarcely allowed me to have any others, and at least has had the good result that I have hardly taken any notice at all of several very unpleasant events which have affected me during the last few days. If your letter to-day had not brought me the tardy news that that ass of a doctor has at last resorted to quinine, I would have prepared a letter for him from which he could have acquired the taste of truth, word for word, in rather a bitter way. Such behavior in the year 1856 is really unheard of, and deserves to be exposed as a "caution to snakes." This fellow has so annoyed me that out of sheer hatred and anger I could have given him a good thrashing . . .

If you, dear father, believe that you have found in M. such an amiable man, holding similar views to your own, be aware and consider that these

people are like courtiers, or like galoshes, or still more like the gutta percha wine-stoppers, which take any shape you may care to give them—and who only dance to the tune you play to them! While he is in your presence he swears he is a liberal, and in the next moment he glorifies absolutism with a Junker, while a little time before that he has been swearing with a democrat for the Red Republic! These shallow, oily, polished people of "high breeding" offend me to the soul! . . .

For my part, I have often thanked God recently that he made me study medicine, so that, at all events, I shall not fall an innocent victim myself into the bungling hands of such a quack, and that at least I can protect and warn my dear ones against him.

. . . May the dear God make everything happen for the best, and make good all that men endeavor to ruin. I trust that he will soon restore you, my dearest little mother, into my arms, quite well and happy like my old dear one! . . .

At present I am getting on quite well with Virchow. It seems as though we are gradually getting somewhat accustomed to one another. The day after to-morrow we are to give him a great farewell banquet. Beckmann becomes more and more friendly, and is really quite a splendid man. My best physical pleasure now is swimming, which I practice with almost excessive vigor. For example, the day before yesterday I floundered about in the

Main for over an hour, till I was quite limp and done up, in fact, until I was actually dog-tired. Afterward I always feel very comfortable and very well . . .

89. WÜRZBURG, *21. 7. 1856.*

DEAR PARENTS,

The last days have unexpectedly brought some very pleasant variety into my monotonous life, for which reason I shall describe it all to you in some detail. My first slice of good luck was that I suddenly found on the *plexus chorioideus* of a lunatic the key to the difficult examinations which I have been making for some time on pathological vesicles (cysts) which occur in these organs. In this particular preparation I discovered with practical certainty that these strange occurrences are produced by a very peculiar development of the particles of the connecting tissues. All my observations which had previously remained so enigmatical to me have now all at once become clear, and if called upon I can very quickly hammer out of it a fairly good essay. This was once more a proof of how patience, perseverance and pertinacity are essential to the attainment of an aim in view. I made these vital observations at the very moment when I was quite disgusted and desperate about the time and trouble I had been expending over it in vain for so long a time, and I wanted to abandon it altogether and to take up a certain subject instead connected with

comparative anatomy, for which, naturally, I have much more inclination. It is the more delicate microscopic anatomy of the common crayfish, particularly of its nervous system, which, moreover, I shall pursue all the same, because it is very interesting.

In the evening of Saturday, 19. 7., we, that is to say, a group of 120 medical men, gave Virchow a ceremonial farewell festivity, a grand supper with beer in the "English Garden." As it soon became too chilly in the open air, we had to go indoors and there do honor to the ceremonial repast in the very nicely decorated hall. When Virchow arrived at 6.30 he was received with a grand flourish of trumpets by the musicians and with cheers by us. Then Beckmann, as chairman of the celebration committee, made an extraordinarily good, hearty, and well-thought-out speech, after which we presented Virchow with our testimonial, a very beautiful, magnificent silver goblet, made by Strube in Leipzig, and which cost 130 taler. Virchow was very much surprised, delighted, and, as far as his cold temperament would admit, even touched. He replied and returned thanks in a very long, excellent speech, in which he explained to us his entire scientific and, at the same time, political and religious creeds, so very frankly, sincerely and freely, that we listened to it with enthusiasm. Virchow specially pointed out that his entire scientific and human effort and thought, his conceptions

and aspirations, were solely and only dedicated to the bare, naked truth, its unprejudiced recognition, and its unaltered diffusion; how he found his entire satisfaction in consistently striving after this one aim; how he gained thereby many enemies, but capable and noble friends as well; and also how he will always pursue this way of reckless pure truth in future, regardless of hostility. Then he encouraged us, as the studying youth, and specially the medical, being those who are occupied with anthropology, the study of the healthy and the sick man in the widest sense, who constitute the only forceful element from which a good stock of German men filled with truth and strength can ever again be recruited, always to persevere in our efforts. Then he exhorted us to discard more vigorously all other prejudices with which unfortunately we have been crammed since our childhood, and to regard things simply and naturally as they are. He concluded with a description of his entire career to the present time, and specially emphasized how much he owed to Würzburg, why the latter was so dear to him, and how his experience here will always remain cherished and valued by him. In reality, Beckmann's speech pleased me much the better of the two, as not only did he deal with the intellectual side and very nicely emphasize Virchow's brilliant merits in the cause of science, but he also admitted the right of sentiment to take its share, and explained with warmth the great influence Virchow

has acquired at the same time over our purely human development. With regard to the goblet itself, it was, although not large, of very splendid and precious workmanship. On the lid there stood the figure of Hygeia, with the inscription: "To their revered teacher, from his grateful pupils"; underneath it a laurel leaf. Around the bowl of the goblet were entwined sprays of ivy and vine under which was written the quotation from Bacon which had been adopted by Virchow as his motto in his "Endeavors for Unity": *Homo naturae minister et interpres tantum facit et intelligit, quantum de naturae ordine re vel mente observaverit, nec amplius scit aut potest!* very significant of Virchow's purely empirico-realistic tendency . . .

Of the invited guests, who included all the professors of the University, only about half were present, among them, however, one whose presence made us terribly angry, and on his part was nothing less than a masterpiece of impudence and insolence. He was a professor of mathematics, Mayr, formerly a Jesuit scholar and Catholic priest, who had not only denounced Virchow and Kölliker on several occasions on account of their secular observance of Sunday, but who also on other occasions had shown himself in the most scoundrelly manner to be their open as well as their secret enemy. This infamous fellow now had the impertinence to take a seat exactly opposite Virchow, although I had twice called out to him that it was reserved. This was

positively too outrageous, and so I organized a real cabal against him, through which I fortunately succeeded in driving him away. At first I placed myself with several acquaintances immediately in front of him, and when he walked about in the hall I initiated a regular growl against the Jesuits and the ultramontanes, as being men of falsehood and hypocrisy. This soon brought him quite beyond himself with rage, and completely put him out of countenance; but still more so the observations which two acquaintances of mine, who had seated themselves on either side of him, made to him about Virchow's services in the cause of freedom and liberty of thought and belief, etc. Consequently he quickly sneaked out, and as he went I still shouted after him in the doorway that the best thing that ultramontane spies could do was to sneak out in good time. Thus our wrath had changed to joy. The other uncongenial elements soon disappeared and, left to ourselves, we were extremely jolly, and the cheerful sound of music and the singing of students' songs brightened us up tremendously . . .

On Saturday Kölliker kindly invited me to accompany him to Trieste in the autumn vacation, in order to observe marine animals there. This is indeed a thought which can relegate all other considerations to the background, and which immediately fired my imagination so vividly that all my good resolutions to devote myself to pathological

anatomy, etc., here during the holidays were suddenly scattered to the winds. I would be able to accept the very kind and extremely valuable offer all the more readily, as Virchow will now probably remain here for the greater part of the holidays! Yet I shall allow my first terrible excitement to cool down to some extent before I speak more about it to Kölliker and to Virchow himself. For the moment I will only tell you that this is another opportunity which can occur to me only *once* in a lifetime, and one that is *extremely important for my zoötomico-histological development!* . . .

Your old faithful ERNST.

90. WÜRZBURG, *25. 7. 1856.*

DEAR PARENTS,

. . . The days of extreme joy were followed, as ever happens as a rule with me, by days of excessive misery. Only this time the cause was not, as was frequently the case before, merely self-created or imaginary but had a very material foundation. Already when the good people from Stettin had left on Monday morning I did not feel quite well, had absolutely no inclination for work (which I thought could be explained by the splendid jollification on the previous day!) and in fact did nothing all day long, and felt very limp and depressed. During the night I had a very violent attack of diarrhœa, which increased, accompained by the most violent pains in the abdomen and feverish shivers, to such

an extent that already at 9 o'clock I had to leave the School of Anatomy and go home. On the way I suddenly became so weak that I could neither stand still nor proceed. My chum Dr. Rausch, of Speier, a very nice, homely fellow, immediately put me to bed and fetched Beckmann and Dr. Grohé (my predecessor). All three now held a consultation about me, and were soon in agreement as to the mode of treatment. They dosed me with large quantities of opium (which I had already taken in the night) and prescribed hot poultices all over the abdomen—as hot as I could bear them. Meanwhile the attack had reached such a pitch as I had never experienced before. From 10 till 11.30 I was in continual agony, to such a degree that I writhed about like a worm, and without a moment's rest was lying in the most violent state of convulsions. Combined with it, in spite of double bedcovering, I shivered all over my body. At last, toward midday, the cramps decreased to a considerable extent as the result of the continuous application of the poultices, which at first were very painful. As a consequence of the strong doses of opium, the very violent diarrhœa also stopped in the afternoon. At 1 o'clock, after the course was over, I was visited by Virchow, who, instead of the pure tincture of opium, prescribed Dover's powders and ordered the hot poultices to be continued. However, my stomach was so inflamed that as soon as I had taken the second powder I

began to vomit violently, for which reason I left off the powders and returned to the pure opium. Toward evening the violence of the attack had passed over, but I was so completely done up and exhausted that I lay motionless in a kind of stupor, and was so completely indifferent to everything around me that I could neither think nor do anything. I can only remember that before evening I fell into a deep and sound sleep, and that I awoke the next morning at 8 o'clock absolutely bathed in perspiration; but, although very weak and run down, I felt comparatively bright and clear in my head. As it was very warm and fine in the afternoon I was allowed to get up for a little while and walk about. Yet I was still so much done up that I could scarcely walk or stand up, much less work. Also yesterday (Thursday) I was still totally incapable of doing anything, and tried to get gradually accustomed to some extent to my ordinary way of life. It is only to-day that I am completely recovered, and am more fresh, lively, and fit and ready for work than on any other day before this happened. I have so minutely and accurately described the whole story to you, because it is an excellent contribution to the theory of my system, which, bodily as well as mentally, always seems to love extremes, and to jump suddenly from one to the other. I have surely inherited a good deal of my terrible nervous irritability and reflex excitability from my dear old mother, who is also so

very frequently tormented by her "nerves!" What was really the actual cause of the whole affair, the learned doctors are not even now united in their opinions: probably a serious error in my diet (of which I am not at all conscious), or a terrible cold (which I could only have caught on Sunday during a trip on the water). Their unanimous diagnosis amounted to: rheumatic cholic, with a sharp catarrh of the intestines. As for the rest, my acquaintances were all very friendly and attentive, particularly Dr. Grohé, who made me feel quite embarrassed by his kindness. My landlady also nursed me very kindly, and Virchow's sympathy actually took me by surprise. I had visitors nearly all day long, and almost continually there was one or another to look after me! I would not have thought that people could show such extraordinary sympathy toward me. Subsequently I was much chaffed about the whole affair, because the entire feverish attack was confidently attributed *in causa nexus* to the presence of my two amiable cousins, on whose account I have had to put up with much banter one way and another, from my acquaintances as well as from Kölliker and Virchow; but, nevertheless, they made me very happy last Sunday! . . .

Now that I have regained my strength, the most important thing that is running in my head and occupies my thoughts more than anything else, is my journey to Trieste. In the meantime I have talked to Kölliker about it, and the idea seems to

to take a very good shape. Kölliker intends to go with Heinrich Müller (from here) in the middle of September to Vienna for the meeting of naturalists (which will last from about the 16th till the 22nd of September), and from there for several weeks to Trieste, in order to observe marine creatures there (quite an excellent habitat, where Johannes Müller has made many of his most important discoveries). I need not say how exceedingly welcome in every way the frequently repeated and most friendly proposal made by Kölliker that I shall accompany him has been to me, and what extraordinary fruit this splendid opportunity will bear for me. I will only add the one thing that the plan can be excellently combined with the conditions prevailing here: that is to say, Virchow will only leave at the beginning of the holidays, and at the end of September, just when I would be in Trieste, he will be here and will not be in need of me then, because his successor will also have arrived. But the whole question is still too remote for me to write more about it in detail now. If it should happen that there will be another recurrence of cholera in Trieste, Kölliker will go instead to Nice, where probably I would not be able to follow him, for pecuniary as well as for other reasons. If, however, our Trieste plans should be realized, I would most fervently beg you, dearest parents, to grant me the permission and the means to undertake this journey of four weeks, the reasons for which I shall not

waste any more words upon now, as they will surely be quite obvious to you . . .

With hearty love, your old ERNST.

91. WÜRZBURG, *4. 8. 1856.*

DEAR PARENTS,

. . . How much would I like to be with you, especially as just now a thorough relaxation from my former conditions appears to be more and more urgent in order to keep me going, mentally and physically. For the last three months of the summer have been extremely useful in every way, and hitherto I have had no cause to regret that I have sacrificed the whole of the summer to this position. First of all, I have penetrated *ex fundamento* into pathological anatomy, to which I have now almost exclusively devoted myself for a year and a half under the guidance of Virchow, more than I shall probably require for my special purposes, and more than is requisite for an average *medicus*. Through the constant, although certainly not agreeable but extremely instructive and enlightening personal association with Virchow, I have profited to such an extraordinary degree, not only in my special scientific but also in my general human training, that, indeed, I believe that I have essentially improved and that I have overcome many bad habits and eccentricities. In spite of all that, however, I do not believe that it is worth my while to occupy this position any longer. First of all, I

have no intention whatever of making pathological anatomy my favorite study, which for the whole of my future will rather be "scientific zoölogy," that is to say, comparative anatomy and histology. But, secondly, I also see that after I have now mastered the most essential parts of it, a further study of it would in no way be worth either the time or the trouble which such a specialization would require. As a matter of fact, there is an immense number of very tedious things connected with my office; for instance, the constant scribbling down of protocols, diaries, descriptions of post-mortems, etc., which only outweigh, to a small extent, the great collateral advantages of training and increase of knowledge. Finally, it is really high time for me once more to approach medicine from another and more practical side, in view of the State examination (in the winter of '57–'58). Therefore, under no condition shall I continue to hold the position of assistant to Virchow in Berlin. Moreover, the question will be settled of its own accord in this direction and with Virchow's approbation, the conditions there being altogether different and on a much wider scale! In reality, Virchow will not directly have any assistant there but his own prosector, and the latter will only then select his assistant. Since I have begun to grow tired of pathological anatomy, and since the dissections, so interesting at first, become on the whole very tedious to me by reason of their monotony and

constant repetition, I am now quite glad that I shall at last have done with it, and am heartily rejoicing that once more I can work completely *con amore* all through the winter in my nice little study, and be able thoroughly to fill out the many theoretical gaps in my medical knowledge. What destroys my pleasure now more than anything else in my continued sojourn in old Würzburg, to which by the way I am extremely grateful for my three years' apprenticeship, is the restless love of wandering, just as happens with the migratory birds, which awakes regularly every year at the beginning of the autumn holidays. Since Kölliker made me the delightful offer, the rambling spirit, which previously had been suppressed by a great effort, has powerfully taken possession of me, and now my entire and sole thought is concentrated on the sea and its numerous and marvelous inhabitants. I have now turned my back upon pathological anatomy, to which I had dedicated my entire service for three months, and the dissections, etc., are only still performed by me with official diligence but without any special interest. I was really surprised and, at the same time, glad to see what a slight impetus was necessary to carry me completely back again to my dear old inclinations and favorite occupations. But I must now employ all the rest of my time before the journey in preparing myself as thoroughly as possible for it. The definite decision as to the actual place to which we shall go

will only be made in a fortnight's time. On the same day that I received your last direct dear letter, in which you, dearest father, promised, with the most liberal kindness, to provide me with the traveling money not only for Trieste but also for Nice, Kölliker said that probably he would not go to Vienna and Trieste, but to Nice, and asked me all the more cordially and urgently to accompany him to this even far more interesting place. At first I was very much surprised, because, in reality, I had not seriously thought of Nice, a journey to which place seemed far too expensive and splendid for me. But the more I thought about it, the more attractive and full of promise Kölliker's plan and proposal appeared to me, and when I had finally skimmed once again through Vogt's *Ocean and Mediterranean* my plan was quickly and definitely decided upon. The latter work is very well adapted to awaken in every reader, although at first he might not be as enthusiastic about nature as I am, the greatest longing for this garden of Paradise of Europe, and *in specie* this choice resort of its most select and most varied marine creatures. It is natural that the impression it has made upon me with its charming zoölogical descriptions of nature has been all the greater, and already last year, when this book first came into my hands, and I repeatedly read it over and over again, it excited in me such a longing for this spot on the shores of the Mediterranean, so full of these most delightful, most mag-

nificent wonders of nature, that I contemplated it to be the highest happiness if I should some day be allowed to observe and make researches there for some time. I did not guess that there would be so speedy a realization of this thought, and for this reason, when now the fulfilment actually seemed to take shape, the prospect of it appeared to me to be so problematical that in the first days the whole thing struck me as being nothing more than a beautiful dream. It was only quite gradually that I could accustom my thoughts to it, and accordingly change my plans for the autumn holidays which I had thought I would be compelled to drag out here. If everything turns out as we have so far planned, I shall start from here on about the 8th or 9th September, shall go, viâ Frankfort, Bâle, Berne, to Vevey, where I shall pick up Kölliker, who will already start for there in a week's time. Then we intend to go, viâ the St. Bernard or Mont Cenis, to Turin, and over the Col di Tenda to Nice, where we shall study with our microscopes for over four weeks. From there Kölliker and Heinrich Müller will go to Paris, while I intend to direct my homeward journey viâ Genoa, Novara, Lago Maggiore, Splügen, Chur, Lake of Constance, Augsburg, etc. What a great pity it is that the limited time will compel me to hasten through the magnificent Swiss country at such a pace! How beautifully and comfortably could this route be combined with a delicious Swiss journey!

But unfortunately this is impossible, and I have to reserve that pleasure for some future time . . .

Kölliker and, particularly, Heinrich Müller himself, who has been several times in Nice, have assured me that life there in *summer* is relatively cheap, a franc for a room, 2 to 3 francs a day for food, which, therefore, comes to about a taler; on the whole that would be considerably cheaper than in Heligoland. It is only in the winter (from November), when Nice is overcrowded with swarms of consumptive Englishmen, that it becomes very expensive. Thus the chief expense would fall on the long journey to and fro. But you are aware that in this I am so little extravagant and know so well how to curtail my expenses, as can only be expected of a German student without means, that *summa summarum* the six weeks' journey would, at the utmost, cost about 150 taler. But I can still send you further details about this. If this sum should appear to you to be too large, I ask you, dear parents, to consider that this will be the last journey that will be allowed to me for several years, because next year there will be the State examination, and 1858, the military year, will chain me to Berlin. Likewise, I promise you that I will try to make up for this great expense by all possible economies and curtailments in my life in Berlin, where I shall give up *all* enjoyments with the greatest willingness. Finally, there is also to be

considered that in addition to the quite extraordinary delight and joy in nature that the journey will afford me, the benefit to my training in special science and comparative anatomy and histology will be quite immense, and will be out of all proportion to the relatively small expenditure. That, in addition to all this, I shall still have the privilege of being introduced into this zoölogical paradise by my widely celebrated and highly esteemed master Kölliker, is a happiness which can only blossom for me once in such a way, and which has come to me just as unexpectedly as it is so greatly desired. But enough of this! Otherwise I shall fall again into the danger of becoming too enthusiastic and of having my nose tweaked by you, dear father, for my inclination to fall into extremes. However, with regard to the latter I must acknowledge that you are absolutely right in your remarks about it. Only I believe that this, that is to say, my very slight inclination to steer a golden middle course, has also for the moment its good side, namely during the years of my development (from the 20th to the 25th year). At least, I see that very many of my acquaintances, who have always been most careful to steer this middle course, have become very average people, and can only produce average work. On the other hand, I believe that I owe the happy direction which I have recently followed, and in which I can now continue further to train myself with scientific consciousness, in a

great measure to the undoubtedly partial, extreme enthusiasm, to the intensity with which I take up and pursue all things that really interest me. I must also admit that there is much that is injudicious in this narrow point of view, and Virchow is quite right when he calls me the "enthusiastic" instead of the "matter-of-fact" observer. Moreover, through the firm direction which I owe to your consistent and religious education, dearest parents, I am more protected than others against the errors that are involved in such wavering from one extreme to another . . .

Your old ERNST.

92. WÜRZBURG, *13. 8. 1856.*

DEAR PARENTS,

. . . The marine fauna of Nice belongs to the richest and most remarkable that we know. Not only are those species of marine creatures that are represented in Heligoland, with their rich, beautiful and various species, to be found there, but there are also swarms of the many and very peculiar and instructive families which are rare or non-existent in Heligoland. But to them belong just the most peculiar of all the invertebrate animals, above all the magnificent Siphonophores, or swimming polyps, then the Salpes, the innumerable army of ink-fish, or Cephalopods, the ribbed jelly-fish, a selection of the most wonderful fish, crabs and shells, the Pteropods, etc., etc., in short, in this respect, Nice

is the universally recognized paradise of the scientific zoölogist. That I shall now be introduced to this overwhelming profusion, in which I can only find my way with difficulty, by the aid of an experienced scientist who already knows all these forms thoroughly, that, besides that, this mentor will be my highly esteemed master Kölliker, to whom I owe the foundation of the whole of my anatomical education, that I shall be allowed to absorb while yet a student these impressions with the most sensitive mind of a youth, is, indeed, such good fortune as but rarely occurs, and which I could only have imagined in a dream. Another of the chief advantages that a stay in Nice would bring me would be the attainment of material for an essay on zoötomy, which would be very agreeable to me. That there will be no lack of material there is self-evident. I will say nothing about the extraordinary enjoyment of nature which I would also have in Nice, one of the most magnificent spots on the shores of the Mediterranean, with its prolific southern vegetation and marine flora, because it does not come into consideration, although I might well deserve it after a whole summer of difficult pathologico-anatomical work! I would only like still to mention the great advantages which my body, being in great need of relaxation after the atmosphere of the rooms, would derive, especially from the delicious sea bathing . . .

Your faithful old ERNST.

93. WÜRZBURG, *22. 8. 1856.*

DEAR PARENTS,

Naturally I am now living here in a semi-moribund condition, because with at least one half of my thoughts I am only in Nice, and with the Mediterranean Salpes, Pteropods, Cephalopods, Pyrosomes, Holothuries, Siphonophores, etc., and many other magnificent creatures which I have never seen, fished, caught, admired, dissected, observed through the microscope, etc., in Heligoland. I can scarcely abide the time till I can enter this zoölogical paradise. Often everything appears to me only like a dream, and all the greater is my joy when I assure myself that it shall indeed be realized. To-morrow Müller also leaves, so that I am now absolute autocrat of the School of Anatomy . . .

Yesterday I received a very nice letter from Lachmann, who sends you his best compliments. Johannes Müller is also going to the Mediterranean, probably to Marseilles, perhaps to Nice as well. It would be too magnificent if we were to meet this most divine of all natural scientists there! . . .

Your old ERNST.

94. WÜRZBURG, *27. 8. 1856.*

DEAREST PARENTS,

. . . I have not yet settled the day of my departure, and shall arrange it according to whether you come here or not. If you really abandon your visit

to Würzburg, as you have distinctly said you would in your last letter, I would leave here already on the 5th or 6th September with Dr. Kunde, who will wait for me till then. We would then travel by Bâle and the Biel and Neuchatel lakes to Lausanne, where I could stay for a few days on the magnificent Lake of Geneva. This would be especially agreeable to me, for the reason that Claparède, who has urgently requested me to pay him a visit at his beautiful country seat Clermont, near Geneva, is there now. This would also afford me an opportunity of having a closer look at some beautiful places through which I would otherwise have to fly. It is said that this part of Switzerland, and in particular the Lake of Geneva, is so charming that I would very much like to do this. However, I ask you urgently under no condition to be diverted from your visit to Würzburg in case you would still like to visit me here on the 6th or 7th September. In that event I would only leave here on the 8th, as I am not obliged to be in Vevey before the 11th if I am to leave there with Kölliker on the 12th. I shall probably see the Lake of Geneva, Geneva, Lausanne, etc., on some later occasion, and naturally, you know what pleasure your visit would give me . . .

Now, farewell, you old Würzburg! Now, for the last time, farewell! How often have I already said to myself: "Farewell, for the last time!" And I have always returned. But this time it would have

to be a very remarkable circumstance if I were to see the old place again, that is to say, to remain here for any length of time. It is here that I have first become a man, a physician, a natural scientist; here I have made the acquaintance of, and have learned how to explore the most precious departments of our magnificent science! Here I have found the best friends and masters; it is only here that I have learned to come out of myself and step forth into life! A thousand thanks to you, old Würzburg! Never shall I forget these services I owe you, although often you have given me bitter and most depressing lessons! . . .

I greet you in the heartiest manner,

Your grateful, most loving, old young ERNST.

THE END

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